Kalyanaraman, S., 1999, *River Sarasvati – Legend, myth and reality*, Mumbai, All-India Saraswati Foundation and All-India Saraswat Cultural Organisation

Ancient river (The Hindu, Jan. 8, 2002)

THE RIVER SARASWATI — Legend, Myth and Reality: Dr. S. Kalyanaraman; All-India Saraswat Cultural Organisation (AISCO) and All-India Saraswat Foundation (AISF), Sitladevi Temple Road, Mahim, Mumbai-400016. Rs. 100.

THIS SLENDER volume is written by Dr. S. Kalyanaraman, a celebrated indologist with professional experience as a senior executive. It adds weight to the findings of his painstaking research, recorded in this book, making smooth reading, so rare for a work of this kind.

The now non-existent Saraswati river originated from the Banderpunch (monkey's tail) in the Garhwal Himalayas. Beyond the Indian Himalayas in Tibet near the holy lake, Manasarovar, is Kapalshikhar, the other source of the Saraswati. The river is still there, known locally as the MangNang Tsangpo; further downstream a Survey of India map actually calls it the Saraswati!

River Saraswati is adored in the Rig Veda as the best of all mothers, best of all rivers and best of all goddesses. She is a mother because she nourished a civilisation on her banks. She was once flowing from the Himalayas to the Arabian Sea carrying the glacier waters, which are carried by the Sutlej and Yamuna rivers. Over 1200 of the 1600 archaeological sites of the civilisation unearthed during the last 75 years have been found on the Saraswati river basin where the typical civilisation artefacts such as seals with inscriptions, bronze age medals, weapons and tools, beads, jewellery, weights and measures, and even water management systems have been found! The river was desiccated due to a number of geological reasons dealt extensively as well as interestingly in this research work. Hence, says the writer, the cherished memories of our people of the Triveni Sangamam at Prayag (Allahabad).

The available evidence from archaeology firmly establishes the continuity and indigenous evolution of the civilisation from 3300 B.C. to-date. A recent finding of Prof. Meadow (Feb. 1999, Harappa) suggests the possibility about the script of this civilisation being the earliest writing system of the world! With the Saraswati's desiccation, its place in the nation's psychology was taken over by the Ganges.

But this indologist is sure that the Saraswati will flow again and its spiritual form will regain its Vedic glory, because the entire course of the river of the Vedic age has now been defined through scientific discoveries of an unparalleled excellence and projects attesting to the technological brilliance of Indian scientists and

engineers have been started to revive the Saraswati river over a stretch of 1600 km from the Himalayas to the Arabian Sea.

The Saraswat Brahmins, tracing their legacy to the sacred river, have contributed significantly to the development of modern India as have the enlightened Parsis of Western India done and they are therefore entitled to celebrate the comeback of that glorious river in the map of India in the not-so-distant future!

K. VEDAMURTHY

http://www.hinduonnet.com/thehindu/br/2002/01/08/stories/2002010800120300.htm

THE RIVER SARASVATI:
LEGEND, MYTH AND REALITY

(December 1999)

Dr. S. Kalyanaraman*

[Commemoration volume released at the First Vishwa Saraswat Sammelan held in Mangalore, Karnataka, India, from 16 to 19 December 1999; published by All India Saraswat Cultural Organization, Ashwamedh, 10 Botawala Bldg., Sitladevi Temple Road, Mahim, Mumbai 400016; Price: Rs. 100].

CONTENTS

Prologue
1. Revival of the Sarasvati River
2. Natural History of Sarasvati River
3. Historic Legacy of Sarasvati Civilization
4. Ancient History of Sarasvats and Dravidian Culture
5. Chronology of Vedic Age and Sarasvati Sindhu Civilization
6. Language of the Indus People
7. From Sarasvati to Haraqvaiti
8. Evolution of Civilization and Vedic Culture
9. Migration of Ailas
10. Plaksha

Epilogue
Appendixes
Bibliography
About the Author

* Former Sr. Executive, Asian Development Bank; Sarasvati Sindhu Research Centre, Akhila Bharatiya Itihaasa Sankalana Yojana, 5/3 Temple Avenue, Chennai 600015

Prologue

Recently two extraordinary events in human history took place; both events relate to the legendary Sarasvati River, the place where the ancient Bharatas nurtured a great and extensive civilization over 5,000 years ago.

- The entire course of the Sarasvati River of the Vedic Age has been defined through scientific discoveries of an unparalleled excellence.

- Projects attesting to the technological brilliance of Indian scientists and engineers have been started to revive the Sarasvati River over a stretch of 1600 kms. from the Himalayas to the Arabian Sea.

The Sarasvati River is no longer a myth; she is GROUND-TRUTH. The Sarasvati River is no longer a legend; she will come alive to make every Indian feel proud of his and her heritage and to nurture Indian civilization for the present and future generations. She is truly the ambitame, naditame and devitame (the best of mothers, the best of rivers and the best of goddesses) as adored with such passion by Rishi Gr.tsamada in the Rigveda.

The story of desiccation of this great river is the story of unparalleled glory and travails of a civilization. The so-called 'disappearance' of a mighty river is perhaps unique in the entire history of human civilization itself. That such a river existed and nurtured the culture of Bharat is authenticated in the Vedas, and the ancient historical accounts of Bharat called the Pura_n.as and the great epics, the Ra_ma_yan.a and the Maha_bha_rata. The Sarasvati Civilization was the substratum which sustained a riverine and maritime trade over an extensive region with the neighbours of Bharat, from Mesopotamia to Central Asia, and all over Bharat, from Kashmir to Kanyakumari. All along the pilgrimage route described in the Maha_bha_rata, Balarama offers homage to the ancestors and great r.s.is who are the builders of Bharat. Sarasvati is also called Bharati. The following quotes are from the Rigveda:

Aa -ar?tI/ -ar?tIi-> s/jae;a/ #¦a? de/vErœ m?nu/:yei-rœ A/i¶> ,
sr?SvtI sarSv/tei-?rœ A/vaRkœ it/öae de/vIrœ b/ihRrœ @d< s?dNtu .
7.002.08 May Bharati, associated with the Bharatis; Il.a_ with gods and men; and Agni and Sarasvati_ with the Sa_rasvatas; may the three goddesses sit down before us upon this sacred grass. [Il.a_ with gods and man: il.a_ devabhir manus.yebhir agnih; Il.a_ is associated with men; Agni is associated with the goddesses. This and the three following verses are repeated from the second as.t.aka].

A¶e? ya/ih Ë/Tym! ma ir?;{yae de/vaACDa? äü/k«ta? g/[en? ,
sr?SvtIm! m/étae? A/iñna/pae yi]? de/van! r?Æ/xeya?y/ ivña?n! .
7.009.05 Repair, Agni, to the presence of the gods in your office of messenger, (sent) by the assembly engaged in prayer; neglect us not; offer worship to Sarasvati, the Maruts, the As'vins, the waters, the universal gods, that they may bestow treasures (upon us).

z< nae? de/va iv/ñde?va -vNtu/ z< sr?SvtI s/h xI/i-rœ A?Stu ,
zm! A?i-/;ac>/ zm! %? rait/;ac>/ z< nae? id/Vya> paiwR?va>/ z< nae/ APya>? .

7.035.11 May the divine universal gods be (favourable) to our felicity; may Sarasvati_, with holy rites, be happiness; may those who assist at sacrifices, those who are liberal of gifts. Be (conducive to) our happiness; may celestial, terrestrial and aquatic things be (subservient to) our happiness.

Aa yt! sa/k< y/zsae? vavza/na> sr?SvtI s/ÝwI/ isNxu?mata ,
ya> su/:vy?Nt su/Ê"a>? suxa/ra A/i- Sven/ py?sa/ pIPya?na> .
%/t Tye nae? m/étae? mNdsa/na ixy<? tae/k< c? va/ijnae? =vNtu ,
ma n>/ pir? Oy/dœ A]?ra/ cr/NTy! AvI?v&x/n! yuJy</ te r/iy< n>? .

7.036.06 May the seventh (stream), Sarasvati_, the mother of the Sindhu and those rivers that flow copious and fertilizing, bestowing abundance of food, and nourishing (the people) by their waters come at once together. [The mother of the Sindhu: sindhu ma_ta_ = apam ma_tr.bhu_ta_, being the mother of the waters].

7.036.07 May these joyous and swift-going Maruts protect our sacrifice and our offspring; let not the imperishable goddess of speech, deserting us, speak (kindly) to our (adversaries); and may both (she and the Marut) associated augment our riches. [Let not the imperishable goddess of speech: ma_ nah parikhyad aks.ara_ caranti = aks.ara_ vya_pta_ caranti va_gdevata_ asma_n parityaktva_ asma_d vyatirikta_ ma_ dra_ks.i_t, let not the diffusive deity of speech, having abandoned us, look upon our opponents].

Both the events have no parallel in the entire history of civilization (1) that a river of the magnitude of Sarasvati River had been desiccated c. 1900-1500 B.C. and (2) that like the Bhagiratha story of the emergence of the Ganga, the perennial Sarasvati River will come alive soon to benefit the present and future generations. Both the discovery and the ongoing project should make every Indian feel proud of his and her heritage and the technological competence we have acquired with hard work and diligence.

1. Revival of the Sarasvati River

An event unparalleled in the history of human civilization is taking shape in Bharat, an event which should make every Indian feel proud not only of our ancient heritage but also demonstrate to the world the technological capabilities of India in taking on the extraordinary challenge of reviving a mighty Himalayan River which nurtured the civilization of Bharat for thousands of years. As the river gets revived to benefit over 200 million people in NW India, India will awake to the imperative of ensuring WATER SECURITY for developing India to greater heights in all fields of human endeavour.

Projects are ongoing which will have a long-term beneficial impact on major parts of North West India and revive memories of over 5,000 years ago, by

reviving the mighty Sarasvati River. A mighty perennial river which had nurtured an ancient civilization which has given us the Vedas, had been desiccated due to tectonic causes, river migrations and aeolean activity (aandhi phenomenon). This is an unparalleled event in the history of human civilization. Today technological means are available to revive this sacred river and to make the legacy of Sarasvati meaningful not only to entire Bharat but to the whole world. The project to revive Sarasvati River will be a superb project, of international significance.

Three projects to revive the legendary Sarasvati River were inaugurated during the last few months.

- One project is to link re-activate the ancient channels of the river from Adh Badri (Yamunanagar Dist.) to Pehoa (referred to as Pruthudaka in the Great Indian Epic, Mahaabhaarata)

- The second project to provide a piped feeder from the Bhakra Main canal to Pehoa, using the perennial waters of the Sutlej emanating from the Mansarovar glacier in Mt. Kailash. 50% of the cost is financed by a private philanthropist.The river channel from Adh Badri to Pehoa is mentioned as Sarasvati Nadi on the Survey of India topo-sheets. This project is financed by the World Bank as part of the package of $139 million US Dollars for rejuvenation of the water systems of North West India. The re-activation of this section will keep the river flowing all 365 days of the year upto Pehoa and beyond. Pehoa has the ancient Vasishtha ashram where the Sarasvati River becomes east-flowing and Sarasvati Ghats where homage to ancestors (pitru tarpan.a) is offered by pilgrims. The ghats are more ancient than the pilgrimage ghats in Varanasi on the Ganga River. This pilgrimage site was also visited by Balarama during his pilgrimage from Dwaraka to Mathura along the course of the Sarasvati River which is described in the shalya parvam of the Great Indian Epic

- The third project is to map the ancient drainage system of the Sarasvati River and identify groundwater aquifers and sanctuaries, over a stretch of 1600 kms. from Bandarpunch massif in Western Garhwal (Har-ki-dun glacier) to the Arabian Sea near Somnath (Prabhas Patan, Gujarat) using the remote sensing application centre in Jodhpur, Rajasthan and tritium analysis by atomic scients in Bhabha Atomic Research Centre This is a pre-requisite for re-designing the drainage system of NW India to benefit over 200 million people of the River Basin.

Sarasvati-Sindhu Research Centre, Chennai (Kalyanaraman) has established in a technical monograph (by Dr. K. R. Srinivasan, ex-Director, Central Ground Water Board) that the central Sarasvati River basin in Rajasthan alone can support one million tube wells on a sustainable basis with recharge principally from the Rajasthan canal. *Itihaas Darpan* (April 1998) has brought out a special issue on Sarasvati river.

In the central Sarasvati River Basin, in Rajasthan alone, it is feasible to have one million sustainable tube wells, using the groundwater sanctuaries, the legacy of the Sarasvati River and the waters of the Sutlej through redesigned Rajasthan Canal and NW India drainage systems. Development activities: Ground water management/Land-use systems; NW India Drainage System; improvements to sub-surface drainage (antah salila_ sarasvati_: there are many groundwater sanctuaries and aquifers); afforestation, growing crops such as *salicornia brachiata* (edible oil seeds), almonds, olives, avoiding crops such as rice, wheat or sugar-cane to avoid use of surface water (to eliminate evapotranspiration); use of solar- and wind-power.

The participation of the scientific community in the studies is highlighted by the recent publication (Feb. 1999) by Geological Society of a book titled *Vedic Sarasvati* describing the palaeodrainage system of North West India.

A number of organizations are involved in the research and project work:National Remote Sensing Agency, Geological Society of India, Bhabha Atomic Research Centre, Central Water Commission, State Water Resources Agencies, Central Arid Zone Research Institute, Central Arid Zone Forest Research Institute, Indian Space Research Organization. Satellite images from LANDSAT, EOSAT, IRS 1-A to 1-D have been put to extensive use in the research studies.

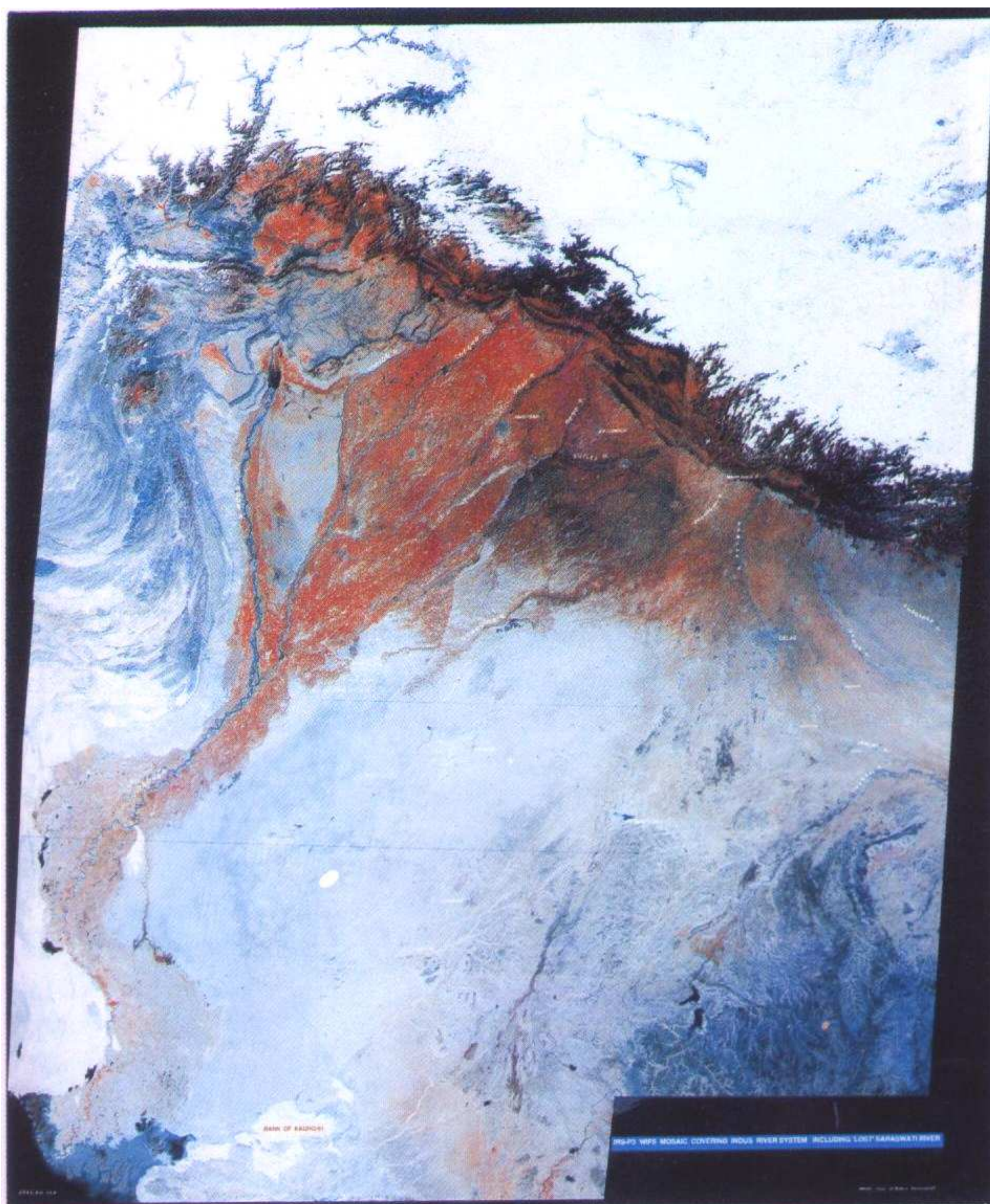


Fig.1. The Indus river system showing Jhelum, Chenab, Ravi, Beas and Markanda/Sarasvati/ Ghaggar rivers.

IRS P3 Indian Remote Sensing Satellite Mosaic: Sarasvati/Markanda/Ghaggar rivers; Indus River System: Jhelum, Chenab, Ravi, Beas; Source: WiFS (Wide Field Sensor)data by exposing red (0.62-0.69 um) through green and near infra red (0.77-0.86 um) through red guns covering the Indus river system from the Himalayas to the Arabian Sea; in: D.P.Rao, Role of Remote Sensing in Understanding of Palaeodrainage Evolution, Memoir Geol. Soc. of India. No. 42, 199: 237-244.

Many challenges lie ahead in completing the rejuvenation of the Sarasvati River Basin from Har-ki-dun glacier in W. Garhwal upto Somnath, Gujarat stretched over four ecological zones: receding Himalayan glaciers, Siwalik foothills, semi-arid Marusthali and marshy Rann of Kutch and Saurashtra. The ambitious project profile includes: a comprehensive design of the NW India Drainage System and review of land-use patterns and afforestation programmes (including growing of halophytes—salt-resistant cash crops such as Salicornia brachiata), action to stop the receding glaciers in Uttar Pradesh (W. Garhwal) and Himachal Pradesh, resolving water-logging problems in Haryana and Punjab, recharging of the groundwater resources in Rajasthan and Kutch by extending the Rajasthan Canal beyond Jodhpur, using the waters of the Rajasthan Canal (which draws the waters from the perennial source of Sutlej – Manasarovar)—to recharge the groundwater resources, provision of additional wells in the entire Basin, use of solar and wind-power to power the pumpsets for tubewells, and, improvement of subsurface drainage system in the entire Sarasvati River Basin. Conjunctive development of watershed projects in Rajasthan and Gujarat using the groundwater resources and recharge facilities using perennial surface waters will be essential to evolve changes in the land-use patterns in the region and to provide the basic need of drinking water facilities in the semi-arid and marshy ecological zones of Bharat..

To effectively regulate the implementation, in an integrated manner, of the range of projects in complex ecological zones and some zones subject to tectonic disturbances, it is essential to constitute a Sarasvati River Basin Authority.

2. Natural History of Sarasvati River

The ground-truth of Sarasvati river as a perennial Himalayan river, has been found using scientific techniques: satellite images, carbon-14 dating, tritium analysis of water samples from deep-wells all along the paleo-channels shown on the satellite images. These have helped in establishing that the river was a mighty one prior to 3000 BC and was desiccated around 1500 BC.

The Sarasvati river binds the Rigvedic culture and the Sarasvati-Sindhu civilization since the Sarasvati river is the locus of over 1200 ancient archaeological settlements and sapta-sindhu is the Rigvedic domain. (Rigveda refers to Sarasvati_ as sindhu ma_ta_: the mother of life-sustaining waters). The movements of the people after the desiccation of the river in the second

millennium, also evidence the continuity of the civilization weaving seamlessly into the historical periods of Indian cultural development.

After the rise of the Himalayas, S'atadru became the anchorage river of Sarasvati; what is now called Yamuna joined the Sarasvati river at PaontaSaheb. Ganga which had emerged from Gangotri received Chambal (now Yamuna) as its tributary at Prayag, Allahabad. An important glaciological dating tool is the fact that each glacier can supply waters into a major stream like the Ganga for a period of 10,000 years. The conclusions from these earth science perspectives are that when the Sarasvati river was in its mighy flow, it had carried the glacier waters which are now carried by S'atadru and Yamuna.

The desiccation of the river over an extended period of about 400 years (ca. between 1900 to 1500 B.C.), is the central cause for the migration of the peoples eastward, northward and southward from the settlements on the banks of the Sarasvati river which had nourished the civilization ca. 3000 to 1700 B.C. (See website URL: http://www.probys.com/sarasvati)

Archaeology has provided C-14 dates for the settlements on the banks of the Sarasvati river and work in historical metallurgy has established the antiquity of the Ganeshwar mines in Rajasthan which provided the mineral sources to sustain the bronze age civilization.

Tritium (hydrogen isotope) analysis of deep water samples taken by BARC (Bhabha Atomic Research Centre) has provided a broad spectrum dating for the waters of the Sarasvati river now revealead as groundwater sanctuaries and aquifers. The waters range from 2400 to 7400 years Before Present (B.P.).

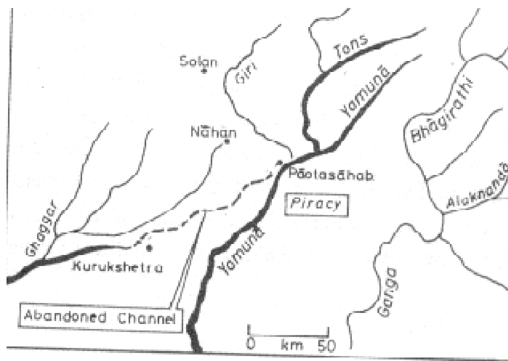
Sarasvati_ is the first creation among rivers and joins the ocean, according to the Great Epic:

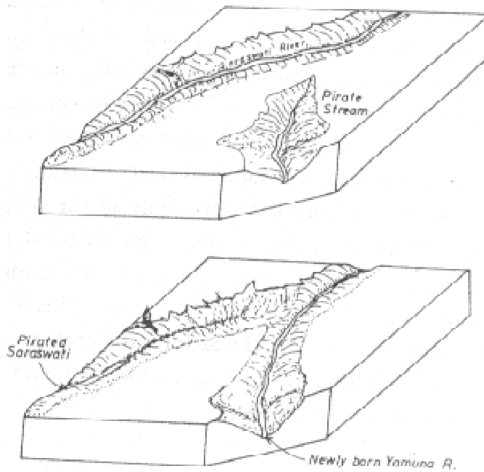
> **es.a_ sarasvati_ pun.ya_ nadi_na_muttama_ nadi_ prathama_ sarvasarita_m nadi_ sa_garaga_mini_** (*MBh. Anus'a_sana* 134.15)

Skanda Pura_n.a emphatically adds that the Sarasvati_ river carries the Vad.ava_nala fire to the ocean:

> **sama_hu_ya tato devi_m sva_m suta_m padmasambhavah uva_ca putri gaccha tvam gr.hi_tva_gnim mahodadhim** (*Skanda Pura_n.a, Prabha_sa Ka_n.d.a* 17.53, Venkateshwar Press edn.)

Padma Pura_n.a (S'r.s.t.i kha_n.d.a 18.198) states that the Sarasvati_ river vanished underground because she was made to carry the Vad.ava_nala fire. The reference is apparently to some large-scale tectonic disturbance which resulted in river piracy and river migrations involving the tributaries of the Sarasvati_ river. An intimation of this possible tectonic event is related in a legend in the Great





Epic. Devas led by Brahma brought Ka_rttikeya to the Sarasvati_ river and made him the Commander of their army. With the s'akti given him by Agni, Ka_rttikeya broke asunder the kraun~ca mountain which sheltered the daitya Ba_n.a, son of Bali, who tormented the devas. That the kraun~ca mountain near Sarasvati_was rent asunder by fire is a significant reference to the tectonics of the Himalayan ranges and the foothills of the Siwalik mountain ranges.

A south-flowing branch of the Chambal, (the southwestern tributary of Ganga) cut its channel headwards and captured the water of the then south-west flowing Sarasvati. The new channel, through which the diverted watger flowed, was later named Yamuna. Map shows the drainage pattern after this river piracy—after the Sarasvati was robbed of its watger by the Ganga through the agency of its tributary. (After Valdiya, K.S., 1996, River Piracy: Sarasvati that Disappeared, in: *Resonance*, Vol. 1, No. 5, May, Bangalore, Indian Academy of Sciences, Fig. 8).

> "(About 600,000 years ago) the Main Himalayas at first replaced the Tibetan Marginal Mountains as the recipients of the full force of the monsoon, and the south-flowing streams were able to maintain their courses by down-cutting as the Siwaliks began to arise. But when the Lesser Himalayas (the Mahabharat Range in Nepal) were elevated, less than 200,000 years ago, some of these rivers were ponded back behind them, forming huge lakes (Note by Kalyan: Hence,the name Sarasvati!!) Eventually, the water rose high enough to find outlets to the south (added, of course, by the work of the truncated rivers cutting back through the Lesser Himalayas), and the lakes were drained, leaving the level basins found today around Kathmandu and Pokhara in Nepal (Note by Kalyan: note, the placid lake in PaontaSaheb where Yamuna pirated Sarasvati) South-flowing streams cutting through the Siwaliks had no difficulty in maintaining their courses because that frontal range was never high enough to shut off precipitation in their source areas. Yet the uplift of the Himalayas, including the Siwaliks, is apparently still continuing, offset by rapid erosion of course, and earthquakes are by no means uncommon as a result... (p.25)... there would seem to be little doubt that the present, almost imperceptible watershed between the Ganges and Indus drainage is very recent in origin. Here the key seems to lie in the shifting or migration of stream beds across the alluvium of the plains, and key role to have been

played by the Jumna and a former stream (possibly the legendary Sarasvati) the course of which is now marked by the bed known as the Ghaggar in the Indian Punjab and Rajasthan, and as the Hakra in Pakistan Bahawalpur, that parallels the Sutlej towards the Indus. The enormous amounts of detritus brought down by the Punjab rivers and the present affluents of the Ganges are more than sufficient to explain stream blockage and shifting without invoking tectonic forces, and capture of one stream by another is well-attested. The Beas, for example, was captured by Sutlej at the end of the eighteenth century. Its old course near Harike to the Chenab above Panjnad is well marked in the landscape of the southern Pakistan Punjab, with the town of Kasur and a series of villages still lining its 'banks'. The Ghaggar, which is used in part by modern canals and which has begun to flow again as water tables have risen, may very well represent the former course of such a truncated river. Spate suggests that it could have been fed either by the Sutlej, itself occupying a different channel, or by the Jumna. If it was the Jumna, then the Jumna clearly has been captured by the Ganges... in the broadest sense the Indus Plains may be regarded as one vast and fairly homogeneous aquifer, a sort of vast sponge, capable of absorbing runoff from the foothills as well as rainfall and seepage from the rivers and canals that cross them, and of transmitting this subterranean flow downslope to the Arabian Sea. (Notes: Note the legends regarding the disappearance of Sarasvati underground-antah salila_ sarasvati_!) The water table or top level of this vast reservoir varies with distance from the foothills and from the rivers and canal, as well as with local alterations in the nature of the matrix, and it varies from season to season and year to year. Recent investigations in the Pakistan Punjab have been sufficiently detailed to allow preparation of contour maps showing depth to water table, and comparisons with older data from wells indicate its general rise since irrigation was introduced (cf. Greenman et al, Maps 11, 12, 16-20). Variations in the salt content of the groundwater have also been charter over much of Punjab... The groundwater reservoir apparently represents at least ten times the annual runoff of the Indus Rivers, and in many areas offers an additional source of irrigation water when tapped by tubewells. The control of the water-table level by means of pumping from wells or by drains is also essential to the success of the surface-water irrigation, for in many areas the salt-carrying groundwater has risen perilously close to the surface (Aloys Arthur Michel, 1967, *The Indus Rivers: A study of the effects of partition*, Yale University Press, New Haven)
pp. 27-28)(Note: see the situation in Pehoa-Prthu_daka-in Sarasvati Ghat and Brahma yoni near Vasis.t.a_s'ramam where the river becomes pra_ci_va_hini_; sarasvati is so named in the revenue maps of Haryana and also in *Bha_rat Bhu_racana_,* Survey of India maps.) [cf. Prasher, R.N., The subterranean Sarasvati_, Haryana Sahitya Akademi, *Journal of Indological* Studies, Vol. III, Nos. 1-2, Spring 1988, pp. 301-305).

3. Historic legacy of Sarasvati civilization

Sarasvati River is adored in the Rigveda as: ambitame, nadi_tame, devitame (best of all mothers, best of all rivers,best of all godesses). She is a mother because she nourished a civilization on her banks. She is a river which had flowed from the Himalayas to the Arabian Sea carrying the glacier waters which are today carried by the Sutlej and Yamuna rivers. Over 1200 of the 1600 archaeological sites of the civilization unearthed during the last 70 years have been found on the Sarasvati River Basin. For e.g. sites of Ropar, Rakhigarhi, Kunal, Banawali, Kalibangan, Ganweriwala, Kotdiji, Chanhudaro, Dholavira (Kotda), Rojdi, Lothal, Bet Dwaraka where the typical civilization artefacts such as seals with inscriptions, bronze-age metal weapons and tools, beads, jewellery, weights and measures, water-management systems have been found.

Sarasvati is a goddess adored ever since the Vedic Age, all over India as the goddess of arts and crafts, as the goddess of learning. The civilization nourished by the Sarasvati had transformed the chalcolithic (copper and stone) age into the bronze (copper-tin, copper-arsenic alloys or bronze and brass) age resulting in a revolutionary way to relate to the material phenomena of the world, using hardened metal tools and weapons. She is a goddess of the Saptasindhu region; her va_hana is a peacock or a ham.sa. She carries a veena (lute, string-instrument) on her hands. As Mother Goddess, she is also depicted as Durga who is adored with weapons in her multiple hands, as Mahis.a_suramardini (the killer of the demon, Mahis.a, of the bull form).

The river was desiccated due to a number of geological reasons: Yamuna (called Chambal earlier) cut a deeper channel and captured the tributary of Sarasvati (Tons River) at Paonta Sahib (Himachal Pradesh, a famous Sikh pilgrimage centre). Hence, the cherished memories of the people of Triven.i San:gamam at Prayag (Allahabad) where Yamuna brought in the waters of the Sarasvati to join the Ganga river. Sutlej (which originated from Mansarovar lake in Mt. Kailas, Tibet) which was a tributary of Sarasvati river, joining the latter at Shatrana (Punjab), took a 90-degree turn at Ropar (due to tectonic disturbances) and migrated away from the Sarasvati and joined the Sindhu (Indus) river. The phenomenon called a_ndhi (sand-storms) which is common even today, resulted in the build-up of sand-dunes on the bed of the Sarasvati River in the areas close to Jaisalmer (Thar or Marusthali_ desert, also called Cholistan in Pakistan area). Thus Sarasvati River got choked up and lost the perennial waters coming from the Har-ki-dun glacier (Bandarpunch massif, W. Garhwal, Himalayas). When the river got desiccated, many people moved towards the Ganga-Yamuna doab and moved south towards the Godavari River (there is an archaeological site called Daimabad, on Pravara river, a tributary of Godavari, near Nasik). In the Har-ki-dun valley below the Bandarpunch massif live a group of people called Parvatis; they celebrate Duryodhana as their god and hold an annual festival in his honour. This is a remarkable anthropological legacy affirming the historicity of the Great Epic, the Maha_bha_rata.

Balarama, elder brother of Kris.n.a goes on a pilgrimage along the Sarasvati River from Dwaraka to Mathura, after visiting Plaks.apras'ravan.a and Yamunotri (Ka_ra_pacava). During the pilgrimage, he offers homage to his ancestors. (Even at this time, the river was navigable for a distance of 1600 km. from Paonta Saheb thru Lothal/Dwaraka to Somnath (Prabhas Patan). The pilgrimage along the Sarasvati River is described in great detail in the s'alya parva of the Maha_bharata. So, our epics do contain valuable historical, geographical information of ancient Bharat.

The evidence from archaeology has firmly established the continuity and substantially indigenous evolution of the civilization right from ca. 3300 BC to TODAY. A recent finding of Prof. Meadow (Feb. 1999, Harappa) indicates the possibility that the script of the civilization was perhaps the earliest writing system of the world.

Recently (October 1999) excavations have started in Rakhigarhi on the banks of Sarasvati River. Rakhigarhi is 150 kms. north of Delhi and the site measures 220 ha. in extent which is almost three times the size of Mohenjodaro! As the excavation unravels and artifacts are unearthed, it is likely that we will have to revise our understanding of the so-called Harappan civilization which is slowly but surely unraveling as the Sarasvati or Ancient Indian or Vedic Civilization, with the Sarasvati River being the principal sustaining base (hence, adored as *ambi tame*: best of mothers, R.gveda) for the most extensive civilization ca. 5000 years ago.

Glaciological and palaeo-vegetation studies have established the fact that about 18,000 and 8,000 years ago, Northwest India was a moist region; the region could have supported a developing, maritime, riverine civilization. The pattern of diffusion of black and red-ware of chalcolithic culture and of diffusion of rice cultivation indicates a movement of rice culture from Lothal (2200 BC) to Atranjikera (in the Ganga-Yamuna doab 1200 BC) and Rajadhipi (Bengal 1000 BC).

Glaciological studies have shown the secular sequence of desiccation of the Sarasvati river: (1) the streams were flowing through Markanda river; (2) the streams migrated towards the Drishadvati river; (3) Drishadvati river migrated eastwards, linked up with Chambal which captured the Tons river stream flowing into Sarasvati river at PaontaSaheb (H.P.); (4) S'atadru river stream which had joined Sarasvati river at Shatrana migrated westwards with a 90-degree turn at Rupar and ultimately became a tributary of the Sindhu river. Glaciological studies have also showed the existence of quartzite and metamorphic rocks in Paonta Doon valley and near Ad Badri in Siwalik ranges attesting to the existence of the mighty Vedic Sarasvati river which had brought in these signature rocks.

Dr. Puri is a glaciologist with Geological Survey of India, who has, over 30 years, inventoried 1500 glaciers in the Himalayas as part of the World Glacier

Inventory, Geneva. His scientific findings confirm the source of the Sarasvati River from the Himalayan glaciers.



Tons river, main confluent of Sarasvati River; springs from Har-ki-Dun glacier, Bandarpunch Massif, W. Garhwal; today it is called the Tons branch of the Yamuna.

'Drainage analysis, basin identification, glaciological and terrace studies suggest that Vedic Sarasvati originated form a group of glaciers in Tons fifth order basin at Naitwar (Netwar) in Garhwal Himalaya. In early stages, it occupied the present day drainage of Tons river upto Paonta Doon and took a westerly swing after receiving nourishment from Aglar, Yamuna and Giri. West of Paonta, it followed a westerly and southwesterly course along Bata valley and entered plains at Adh Badri. It continued to follow almost southwesterly course and traversed through Haryana, Rajasthan and Gujarat for nearly 1000 km and joined the Arabian Sea. Mighty Sutlej of today was then a tributary of Vedic Sarasvati. It is quite likely that Vedic Sarasvati might have come into existence during Upper Pleistocene period. The most important event that contributed to the desiccation of Vedic Sarasvati was reactivation of Yamuna tear fault across Siwalik belt between Kalesar and Paonta sometimes around 2450 BC (related to the earthquake evidenced in an archaeological site on the banks of the Sarasvati River: Kalibangan). As a result of this phenomenon, river Dris.advati_ came into existence which joined Vedic Sarasvati near Suratgarh in Rajasthan. With emergence of Bata-Markanda divide, complete reversal in the flowof Vedic Sarasvati occurred in Bata valley whereby it abandoned its previous course through Adh Badri-Markanda and occupied the conduit followed by river Dris.advati_. Meanwhile the Vedic Sarasvati catchment was reduced by 94.5% and got restricted to that of present day Markand. Subsequent to river Dris.advati_ migration from southwest to southeast, Palaeo-yamuna emerged that joined the Chambal river. Later, the Shatudri (Sutlej) also started shifting its course westerwards and consequently got completely detached from Vedic Sarasvati.

'As a result of the above-mentioned events, Vedic Sarasvti got completely deprived of its perennial source of nourishment from Himalaya. It now depends upon monsoon precipitation for its survival. With advent of drought conditions caused by either the emergence of a dry phase in climate or failure of monsoons for a number of years rather decades, Vedic Sarasvati got completely disoriented and acquired the status of present day oblivion.' (Puri, VKM, and BC Verma, Glaciological and Geological Source of Vedic Sarasvati in the Himalayas, New Delhi, Itihas Darpan, *Itihaas Darpan*, Vol. IV, No.2, 1998, pp. 19-20).

“In northwestern part of Jaisalmer district, inspite of very low rainfall (less than 150 mm) and extreme conditions of the desert, groundwater is available at depth of about 50-60m along the course of the defunct (Sarasvati) river and a few dug wells do not dry up throughout the year. It is found that the area through which the river bed is traced supports vegetation even during summer. It is thought that these courses of river in the area still maintain their headwater connection and could form potential groundwater sanctuaries for exploitation. To confirm the scenario, an environmental isotope study was undertaken in collaboration with the Groundwater Department, Rajasthan in Jaisalmer district...The groundwater samples exhibit negligible tritium content indicating absence of modern recharge. Radiocarbon data suggest the groundwater is a few thousand years old. (uncorrected ages: 4950 to 4400 BP) with a velocity of about 20 m/a.” (Rao, S.M. and Kulkarni, K.M., Isotope hydrology studies on water resources in western Rajasthan, *Current Science*, vol. 72, no. 1, 10 January 1997, pp. 55-61). A detailed account of former streams in the region is provided by Kar (Kar, A., 1992). Some of the buried stream segments are potential ground water aquifers.. The course of the Sarasvati to the west of Jaisalmer has an estimated reserve of about 3000 mcm water awaiting a judicious exploitation ...

Ghantiyal Ji is one of the five locations (around Jaisalmer) marked along a 60-km strip of land that is located above an ancient water channel, believed to be an isolated section of the Sarasvati around the area where it petered out into the desert in the time of its geological death throes. Experimental drillings have yielded sweet water just 30 m below the surface.

Tectonic activity in Kutch has led to the conjecture that the Ranns were perhaps lower and linked to the Arabian sea in prehistoric times. (Billimoria, N.M., 1947, The Great Indian Desert with special reference to the former existence of the sea in the Indus Valley (with two maps). *Journal of the Sind Historical Society*, 8(2): 85-127).

Ground-truth: Luni-Sukri lineament (Tectonic and structural control of NW India); Rise of the Aravalli Ranges and River migrations.

Forced eastwards, the Sarasvati was progressively robbed of its waters: first by the Yamuna, then by the Sutlej -- both rivers, along with the Tons, were once a part of its massive expanse. A branch of the Chambal cut northwards in a channel deeper than the Sarasvati, finally beheading the great river. This new channel became the Yamuna, which migrated eastwards. Similarly, the Sutlej migrated westward. A geological paroxysm in the Aravallis pushed it into a U-turn at Rupar, Punjab, forcing a complete abandonment of the Sarasvati, sending the Sutlej into the arms of the Indus.

The Sarasvati's demise indicates how dramatic tectonic movements can change the face of a society. Betrayed by its two snow-fed sources, the Sarasvati was left with the waters of petty streams rising in the puny Shivaliks. Its twin sources survive to this day. The Sarasvati was born in the Banderpunch (monkey's tail)

massif in the Garhwal Himalayas. This is today the source of the independent Tons, one of the Sarasvati's source streams. Beyond the Indian Himalayas in Tibet near the holy lake Mansarovar is Kapalshikhar, the other source of the Sarasvati. The river is still there, known locally as the Mang Nang Tsangpo; further downstream a Survey of India map actually calls it the Sarasvati.

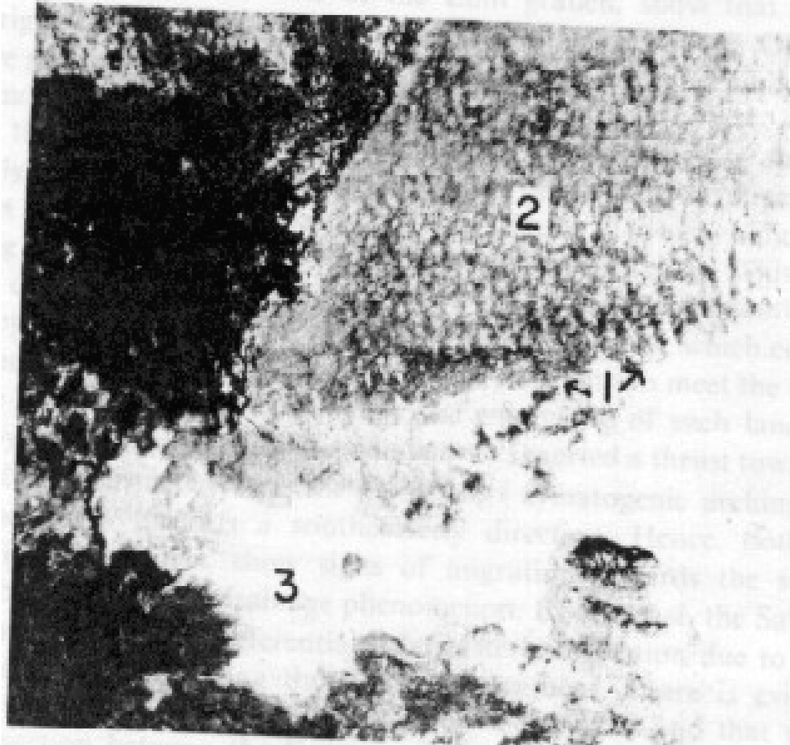
Without its snow-bound origins, the Sarasvati became a shadow of its former self. Its people migrated upstream and settled in today's Haryana and western Uttar Pradesh. There seems to be archaeological evidence to this movement: The total absence of late Harappan settlements in the area of the Sarasvati is in sharp contrast to the dramatic increase in habitations in the plains of Haryana and western Uttar Pradesh. There is also a remarkable scarcity of Harappan sites around what are today's Yamuna and Sutlej. This is again in sharp contrast to the archaeological gold mines turning up in the dry channels of Punjab, Rajasthan and Sindh in Pakistan.

Finally, only flood waters flowed down the Sarasvati's once vast channel. It remained dry for several centuries, though some water again found its way in during the early centuries of the Christian era. The Sarasvati's decline and the loss of its civilisation are an indication of how tectonic shifts can combine with localised climate change to dramatically transform human settlement. As the shifting Aravallis chopped off the Sarasvati's waters, the climate too was changing. Over the years western Rajasthan, once a green, rich expanse with extensive rainfall, gradually turned into a parched, desert land. Where there was once a torrent of water, there remained nothing but tonnes of drying sand, a few lakes that survive to this day, and of course the veins of groundwater under the earth.

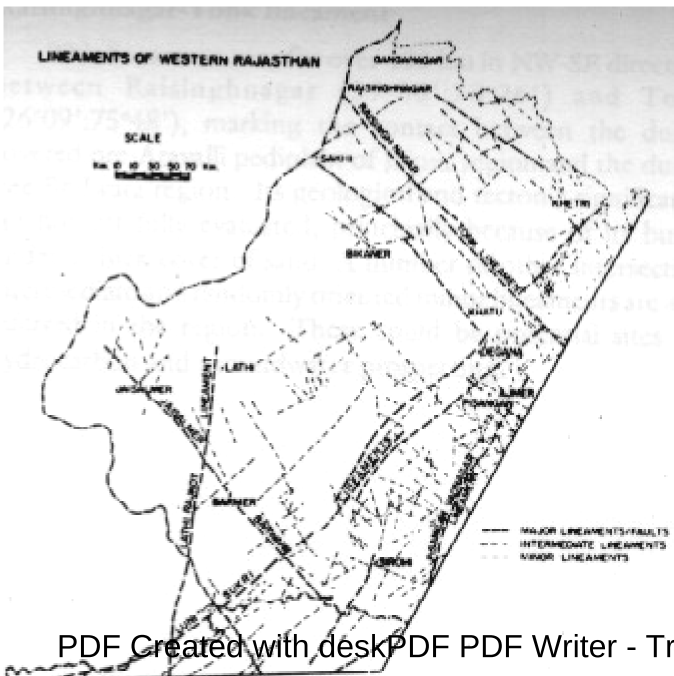
The Sarasvati's desiccation also demonstrates how central rivers have been to civilisation and culture. With the Sarasvati gone, its place in mythology was taken over by the Ganga. To this day, it is the Ganga that is predominant to India's Hindu consciousness. But the Sarasvati, as the drilling rigs at Ghantiyal Ji should reveal, has not disappeared altogether.

The great river will flow again, its spiritual form will regain its Vedic glory, as the legacies of the river are flooding back all over again.

The collision of the Deccan plate with the Tibetan plate accounts for the landmass of Bharat joining with the rest of Asia along the Burmese border, across the Ganga valley and the front of the Himalayas and south along the mountains of NW Frontier and Baluchistan. The flow of the Ganga is along the deep syncline which is filled with alluvium. The resultant effects have been the pushing back and thrusting up of the Himalayan ranges. Sindhu flows along another syncfline, a down warp and a tear as the Deccan plate pushes northward. This plate tectonic activity has contributed to the occurrence of earthquake with the Himachal Pradesh on a 0.85 isoline prone to recurrent earthquakes.

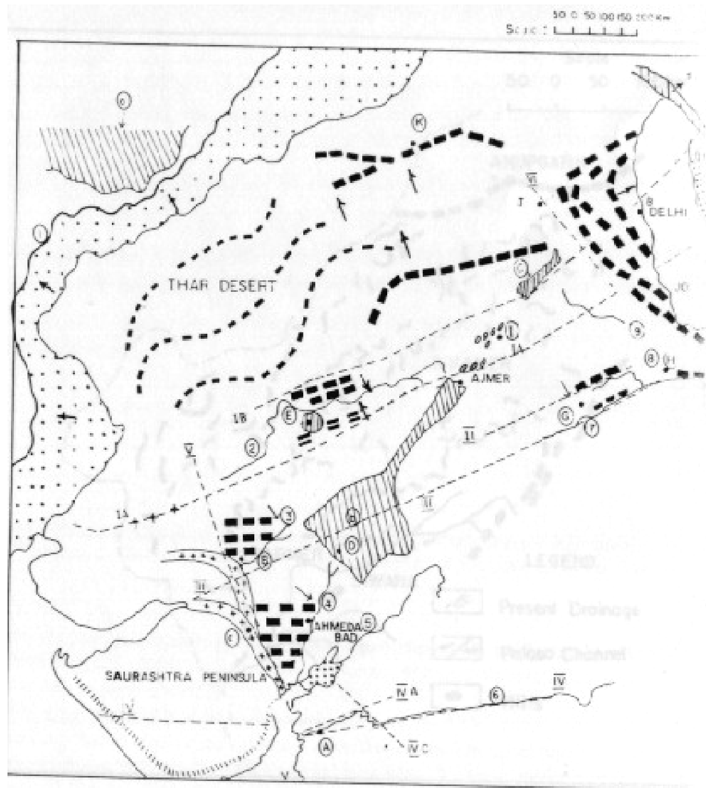


Kutch region; satellite image; 1. Luni-Sukri lineament which is reactivating even in Pleistocene times; 2. Dune field; 3. Marine landforms."The Luni-Sukri lineament is one of the few major lineaments extending from the Great Rann of Kutch in the south-west to Dehradun in the north-east, with a general NE-SW trend and it shows characteristic signatures of Pleistocene reactivation, namely: (a) it manifests itself as a linear contact between the dunes and the Rann in the Rann of Kutch region with frequent seismicities along it; (b) it occurs as two sub-parallel lineaments in the Ajmer sectgor along the intersection of which the Aravalli mountains are dissected, dismembered and subdued; and, it finds expression as a tear fault in the Siwaliks of the Dehra Dun region thus displaying significant evidence of Pleistocene reactivation."(After Ramaswamy, S.M., Balkiwal, P.C. and Verma, R.P., 1991, Remote Sensing and river migration in Western India, in: *International Journal of Remote Sensing*, Vol. 12, No. 12, 2597-2609; Fig. 8; pp. 2603-2605).



Luni-Sukri and other lineaments of Rajasthan; The 750 km. long Luni-Sukri lineament is aligned along the Luni and Sukri rivers. It extends from the Great Rann of Kacch to the Sambhar lake. In the southwest it marks the

contact between the Great Rann and the dune fields, and controls the northern extent of the Great Rann. Occurrence of aligned earthquake epicenters of different dates from 1819 to 1976 AD along it in the Kacch area suggests its neotectonic potentiality. (After Dhir, R.P. et al., 1992, in: Singhvi, A.K. and Kar, Amal, eds., *Thar Desert in Rajasthan: land, man and environment*, Bangalore, Geological Society of India, p. 30).

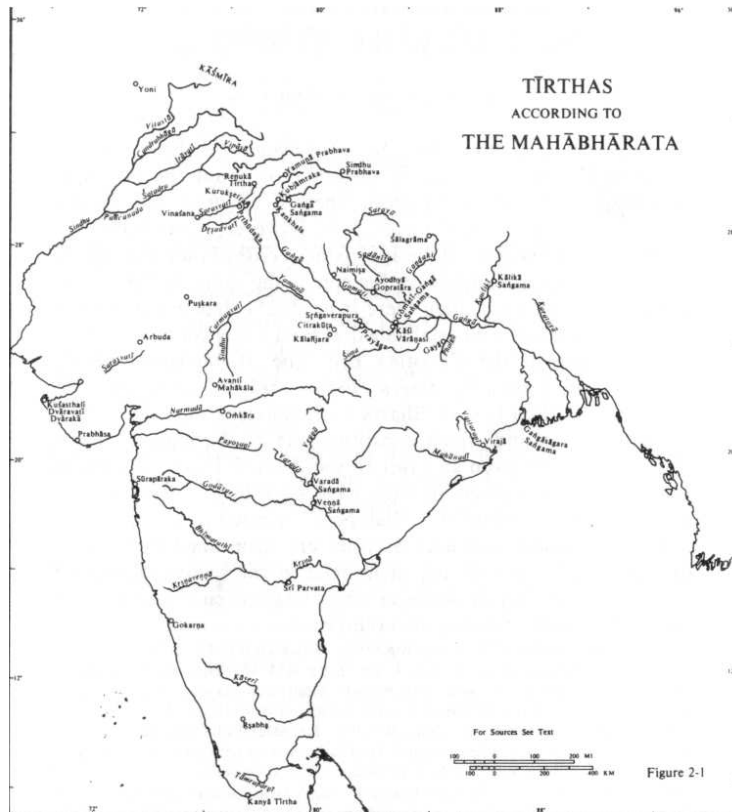


River migrations in Western India . Present day channels, paleocourse and lineaments which were interpreted in different parts of satellite and aerial photographs were mosaiced, and planimetrically controlled maps were generated. (After Ramaswamy, S.M., Balkiwal, P.C. and Verma, R.P., 1991, Remote Sensing and river migration in Western India, in: *International Journal of Remote Sensing*, Vol. 12, No. 12, 2597-2609; Fig. 2). a. Sulaiman hills; b. Aravalli hills; c. Khetri hills; d. Siwaliks; 1. Sindhu R.r; 2. Luni-Sukri R.; 3. West Banas R.; 4. Sabarmati R. 5. Mahi R.; 6. Narmada R.; 7. Chambal R.; 8. Banas R.; 9. Banganga R.; 10. Yamuna R.; 11. Ganga R.; A. Broach; B. Radhanpur; C. Virangam; D. Ambaji; E. Siwana; F. Agra; G. Sawaimadhopur; H. Dholpur; I. Sambhar lake; J. Tosham; K. Anupgarh; L. Dehradun; --- Lineaments.

The latest satellite colour images clearly show the marks of a palaeochannel, as wide as 12 km in places, from the Shivaliks to Bhinmal in south Rajasthan. From there it breaks into five parts, heads towards Somnath and finally disappears near the coast of Saurashtra.

The Croats (of erstwhile Yugoslavia) claim that they are SARASVATS! The Behistun (Iran) inscription of Darius does refer to the region called Hravat (Haraquaiti) which is a phonetic transform from Sarasvati. Sarasvati—Haraquaiti—Hravat-Kravat-Croat! They have a website cross-linked with the sarasvati URL (http://sarasvati.simplenet.com). The naming of rivers as Sarasvati in the Little Rann of Kutch and in the Pus.kar are consistent with the naming of a tributary of Helmand as Haraquaiti.

Thus the name of Haraqauti is simply explained as a memory carried by the people as they migrated out of the Sarasvati River Basin from Northwestern India as the river started to desiccate for the geomorphological and tectonic reasons explained elsewhere.

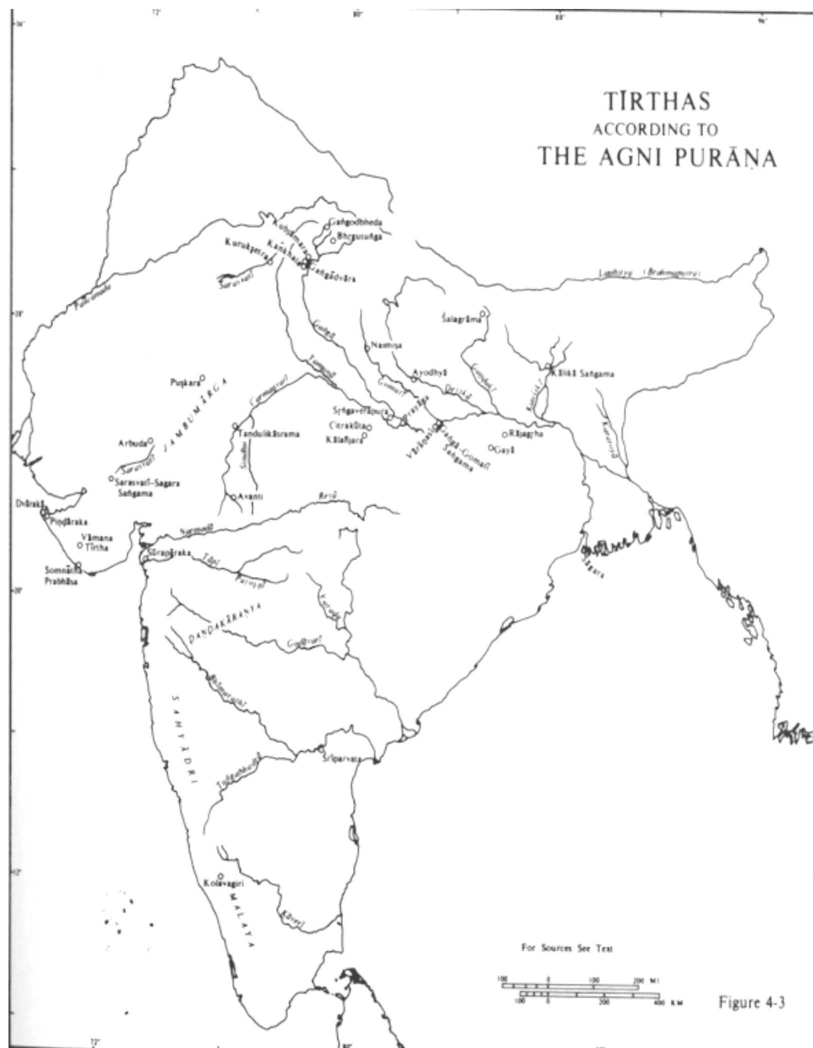


Pattan Minara, Hindu Temple on the banks of Sarasvati River (c. 5th cent. AD?). (Brick decorated). (After Mughal, 1997, Pl. 22)

Binjadasar. A temple in ruins. On the banks of the Sarasvati River. (After Bapat, V.D., and Umapathy, K.R. (tr.), 1994, *Lost' River Sarasvati, Mysore*, Bharatiya Itihasa Sankalana Samithi (tr. from Vakankar, L.S. and Paracure, C.N., 1992, Lupta Sarasvati_ Nadi_ s'odh (Marathi). The Maha_bha_rata endorses that ti_rtha-ya_tra (going on pilgrimages) is superior to yajn~as: "O thou best of Bharata race, sojourns in ti_rthas which are meritorious and which constitute one of the high mysteries of the Rishis, are even superior to sacrifices." The map is based on the Critical Edition of the Maha_bha_rata (Vishnu S. Sukthankar, 1941, Maha_bha_rata, vol. 3, secs. 80-88, Poona; cf. S.M. Bhardwaj, 1983, *Hindu Places of Pilgrimage in India*, Berkeley, University of California Press, p. 30) and based on the dialogues of sages Pulastya (who mentions about 270 places and sacred rivers) and Dhaumya (who mentions about 60 ti_rthas or sacred places) described in the A_ran.yakaparvan. The ti_rthas (passage or ford: RV 10.40.13; 10.114.7) are principally associated with water and are close to riverbanks, confluences and seacoast testifying to the importance of purification in water by bathing or immersion. The association of sanctity with water is also apparent in the remarkable bathing places and drainage systems evolved in the Sarasvati-Sindhu River Basins. (cf. the Great Bath in Mohenjodaro and the drainage systems in Dholavira, apart from the location of water tanks close to the so-called 'fire-altars' in Kalibangan and Banawali). The clusters of the sites are in the Gan:ga_-Yamuna doa_b and the Sarasvati_ River, a locus of extraordinary sanctity venerating the pitr.s and rishis of ancient times. It is notable that the first ti_rtha is Pus.kara (in Rajasthan), a ti_rtha of Brahma_ according to the Maha_bha_rata; pilgrimage to Pus.kara is considered equal in merit to the performance of ten as'vamedha yajn~as. The epic enumerates other ti_rthas

related to Brahma: Brahmaks.etra, Brahmastha_na, Brahmayoni, Brahmodumvara, Brahma_varta. The pilgrimage ends with Praya_ga (modern Allahabad) after circumambulating the entire Bharat. The Epic also refers to Rudra, the husband of Uma. The sacred ecumene of the Sarasvati River Basin get extended to the Gangetic Basin right into the headwater regions in the Himalayas.

Rigveda refers to the burning of sacrificial fires (yajn~as) on the banks of Sarasvati_ and Dr.s.advati_ Rivers (RV. 3.23.4). The satras conduced by r.s.is on the banks of the Sarasvati_ river are mentioned in the Aitareya Bra_hman.a (2.18). A Sa_rasvata yajn~a was organized in Yamuna_ti_rtha of Sarasvati_ (MBh. Vana. 128.14); Bakada_lbhya performed an abhica_ra yajn~a in a jala-kun~ja of Sarasvati_ (MBh. S'alya 40.18); Ekata, Dvita and Trita came to Sarasvati_ to observe a yajn~a (MBh. S'alya 35.24); the holy places on the banks of Sarasvati_ referred to are: San:khati_rtha (MBh. S'alya 36.20), A_dityati_rtha (MBh. S'alya 49.23), Sarasvatati_rtha (MBh. S'alya 50.2) and



Saptasa_rasvatati_rtha (MBh. S'alya 39.6).

The Agni Pura_n.a in Chapter 109, 'Tirtha Ma_ha_tmyam' lists 62 ti_rthas. There are also separate chapters devoted to Gan:ga_, Praya_ga, Va_ran.a_si, Narmada_ and Gaya_ (Chapters 110 to 114). Maha_bha_rata explains the

reasons why a place becomes sacred: “Just as certain limbs of the body are purer than others, so are certain places on earth more sacred—some on account of their situation, others because of their sparkling waters, and others because of the association or habitation of saintly people.” (Anus’a_sana Parvan, chapter 108, verses 16-18; cf. J.H. Dave, 1959-61, *Immortal India*, Bombay, Bharatiya Vidya Bhavan, 4 vols., I, xiv). Every river can be a local Gan:ga_; the transference of sanctity is a remarkable phenomenon in Bharat. (Aghenananda Bharati, 1963, Pilgrimage in Indian Tradition, *History of Religions*, Vol. 3, no. 1, p. 165).

“…the study of the Lost Sarasvati River was planned to materialize in three stages: 1. Preparing a Report of the Quest; 2. Revisits to Quest sites for further research; and 3. Bringing out a volume called ‘The Encyclopaedia of the Lost Sarasvati River…Such a study and allied publications were felt an immediate necessity not only from the point of view of Bharatiya History but also from the point of view of World History. With all zeal and zest, Dr. V.S. Wakankar, one of the senior-most archaeologists of the country, led the Quest Squad along the bed of the River. But fate willed it the other way. Dr. Wakankar succumbed to a massive heart attack on the 3rd April 1988 and the Quest Research retardedc…The Vedic Sarasvati River has an immense importance from the point of view of the History and Culture of Bharath. Revelation and compilation of the Vedic Literature took place on the banks of the Sarasvati. And from its banks the Vedic civilization spread far and wide in the world…” (Pingale, M.N., 1994, Foreword, Bapat, V.D., and Umapathy, K.R. (tr.), *Lost’ River Sarasvati, Mysore*, Bharatiya Itihasa Sankalana Samithi (tr. from Vakankar, L.S. and Paracure, C.N., 1992, Lupta Sarasvati_ Nadi_ s’odh.

So, we have to re-evaluate the history of our ancient civilization.

4. Ancient History of Sarasvats and Dravidian culture

I will cite from the great work by Dr. Suryanath Kamath which is available on the internet and which I have cross-linked on the Sarasvati Website to trace the course of events subsequent to the desiccation of the Sarasvati River and the migration of Sarasvats. The discovery of the Sarasvati River and the Sarasvati Civilization exemplified by over 1200 ancient archaeological sites on the banks of the river and in the Sarasvati River Basin reaffirms the social beliefs of the origin of Sarasvats from the banks of the river Sarasvati. Recent archaeological findings establish a pattern of movement away from the river following the desiccation of the mighty river. Indeed, this vinas’ana (referred to in the Great Epic, the Maha_bha_rata) confirms the importance of the Epic as the sheet-anchor to recreate the ancient history of Bharat. The following excerpts from *History Of the Dakshinatya Sarasvats Sarasvat Vol. 1 No. 1 The Origin and Spread of Gauda Sarasvats* are a logical followup of the discoveries which date back our bronze age civilization to c. 3500 B.C.*:*

> ”According to *Skandapura_n.a* (*Sahyadri Khan.d.a, Uttara_rdha* 1-3), the brahmins that lived in the North of the Vindhyas were called Gauda

brahmins and those from the South the Dravidas. Each group was divided into five sections according to the regions of their settlement. The five (Pancha) Gauda brahmin groups were: the Sarasvats (from the banks of the Sarasvathi river), Kaanyakubjas (from Kanauj), Gaudas (from the banks of the South Ganga or Bengal), Utkals (from Orissa) and the Maithilas (from Mithila in Bihar). The five (pancha) Dravida groups were: the Maharashtras, Andhras, Dravidas (from Tamilnadu), Karnata (from Karnataka) and the Gurjaras (from Gujarat). As the southern brahmins had domiciled in the South for long the Sarasvats, who came to the South newly were described by the local brahmins as Gauda Brahmins and thus the prefix Gauda was added to the Sarasvats. They were from the Sarasvat region. from the banks of the Sarasvathi river...Sarasvats are from the banks of the Sarasvati... This river is found to be more important in vedic period than other *rivers including the Ganga. The vedas were composed mostly on her banks, and it is described as the most mighty river, and the veda describes her as "limitless, undeviating, shining and swift-moving"... The rivers dried, drought followed. The Vedic brahmins were forced to emigrate to the West (Sind), North (Kashmir), East (U. P.) and to the South towards Gujarat and Konkan. In our own times, Brahmins like Kripalani from Sind, Dr. Raghunatha Airi from Haryana and the Kashmir Pandits are identified as belonging to the group of Sarasvat brahmins. Somaya from Cutch and Rawal from Rajasthan are all Sarasvat surnames... Later they were invited to settle down in the agraharas in Konkan and Goa during the subsequent centuries, from the days of the Shatavahanas (2000 years ago) and subsequent rulers like the Mauryas of Konkan, Kalachuris of Konkan, the Bhojas, Kadambas of Banavasi, Chalukyas of Badami, Rashtrakutas, the Yadavas of Devagiri, Shilaharas of Konkan and Kadambas of Goa...

According to Skandapurana (Sahyadri Khanda, Uttarardha 1-3), the brahmins that lived in the North of the Vindhyas were called Gauda brahmins and those from the South the Dravidas. Each group was divided into five sections according to the regions of their settlement. The five (Pancha) Gauda brahmin groups were: the Sarasvats (from the banks of the Sarasvathi river), Kaanyakubjas (from Kanauj), Gaudas (from the banks of the South Ganga or Bengal), Utkals (from Orissa) and the Maithilas (from Mithila in Bihar). The five (pancha) Dravida groups were: the Maharashtras, Andhras, Dravidas (from Tamilnadu), Karnata (from Karnataka) and the Gurjaras (from Gujarat). As the southern brahmins had domiciled in the South for long the Sarasvats, who came to the South newly were described by the local brahmins as Gauda Brahmins and thus the prefix Gauda was added to the Sarasvats. They were from the Sarasvat region. from the banks of the Sarasvathi river...

The tradition preserved by Sarasvat brahmins from Gujarat, recorded in the Baroda State Gazetteer (1923) can be quoted here: "The Sarasvat is a very ancient Brahman tribe which still inhabits a tract in the north-west of

India beyond Delhi, once watered by the famous Sarswati river. It is said that they are descendants of Sarasvati Muni. They came from Punjab to Gujarat by way of Sindh and Cutch with their yajamans, patrons, the, Luhanas, Bhansalis and Bhatias. In religion they are Shaiva and also worship the Goddess Sarasvati".

It would appear that the migration of the Sarasvats, c. in the second half of the second millennium, was along the Arabian Sea Coast towards Goa, just as some outposts of the Sarasvati Civilization are located on the banks of Pravara (Daimabad archaeological site) which is a tributary of Godavari River. There is a temple for Devi Sarasvati in a place called Basara (Vya_sapura) in Adilabad District of Andhra Pradesh, located on the banks of the Godavari River. The sthala pura_n.a states that the Devi was installed by Vya_sa by taking three mus.t.is (handfuls) of sand from the river bed—an extraordinary affirmation indeed of the integrat link of Sarasvati as devi and Sarasvati as river. The appended maps indicate the patterns of ancient settlements right from the foothills of the Himalayas (Ropar) to the Gulf of Khambat (Lothal) and on the Arabian Sea Coast (Prabhas Patan or Somnath and Dwa_raka). It is also significant that Sangam literature of the Tamils notes the claim of the ancient Chera kings that they were the 42nd generation descendants from the rulers of Dwaraka (Tuvarai) and the sage Agastya is revered as the ancient Tamil Muni and the author of the earliest grammatical work in Tamil. Sangam literature is replete with references to the support provided to the growth of Vedic Culture in the Tamil-speaking areas. An important article on the antiquity of relation between Tamil and Sanskrit is: Sharma, K.V. 1983.

"Spread of Vedic culture in ancient south India" *Adyar Library Bulletin* 47:1-1**.** "Among the interesting facts that emerge from a study of the progressive spread of vedic culture from the North-West to the other parts of India, is its infusion, with noticeable intensity, in the extreme south of India where, unlike in other parts, a well-developed Dravidian culture was already in vogue... *Tolka_ppiyam* which is the earliest available work of the sangam classics, is a technical text in 1610 aphorisms, divided into three sections, dealing respectively, with phonetics, grammar and poetics... The other available sangam works are three sets of collected poems, being, *pattu-ppa_t.t.u* (Ten idylls), *et.t.u-ttokai* (Eight collections) and *patineki_r..kan.akku* (eighteen secondary texts), which last appears to pertain to the late period of the saµgam age. The ten poems are: *tirumuruka_r.r.uppat.ai, porun.ara_r.r.u-ppat.ai, cir.upa_n.a_r.r.uppat.ai, perumpa_n.a_r.r.uppat.ai, mullaippa_t.t.u, maturaikka_n~ci, net.unelva_t.ai, kuriñcippa_t.t.u, pat.t.inappa_lai* and *malaipat.ukat.a_m*. All the above idylls are compositions of individual poets, and, except for the first, which is devotional and possibly, pertains to late sangam age, are centred round the royal courts of the Cera, Cola and Pa_n.d.ya kings, depicting the contemporary elite scholarly society and youthful life. The second category consists of Eight collections: *nar.r.in.ai, kur.untokai, ainkur.unu_r.u, patir.r.ujppattu, paripa_t.al,*

kali-ttokai, akana_n-u_r.u and *pur.ana_n-u_r.u*. All these collections are highly poetic and self-contained stray verses of different poets put together in consideration of their contents. The third category consists of eighteen miscellaneous texts, some of them being collections of stray verses of different poets and some composed by individual authors. They are: *tirukkur.al., na_lat.iya_r, par..amor..i, tirikat.ukam, na_n-man.ikkat.ikai, cir.upañcamu_lam, ela_ti, a_ca_rako_vai, mutumor..i-kka_ñci, kalavar..i-na_r.patu, initu-na_r.patu, tin.aima_lainu_r.r.aimpatu, aintin.ai-y-er..upatu, kainnilai, aintin.ai-yanpatu, tin.aimor..i-y-aimpatu* and *ka_r.-na_r.patu*. The verses in these works also refer to social customs and local sovereigns. The above works picture a well-knit and well-developed society having a distinct identity of its own. The frequent mention, in sangam poems, of the Cera, Cola and Pa_n.d.ya kings as the munificent patrons of the poets… and the archaeological evidence provided by 76 rock inscriptions in Tamil-Bra_hmi script which corrobate the contents of the sangam works, in 26 sites in Tamilnadu (Mahadevan, I., Tamil Bra_hmi inscriptions of the Sangam age*, Proc. Second International Conference Seminar of Tamil Studies*, I, Madras, 1971, pp. 73-106) help to fix the date of the classical sangam classics in their present form to between 100 B.C. and 250 A.D… reference to the Pa_n.d.yan kingdom by Megasthenes, Greek ambassador to the court of Candragupta Maurya (c. 324-300 B.C.?) are also in point. On these and allied grounds, the sangam period of Tamil literature might be taken to have extended from about the 5th century B.C. to the 3rd century A.D… It is highly interesting that sangam literature is replete with references to the vedas and different facets of vedic literature and culture, pointing to considerable appreciation, and literary, linguistic and cultural fusion of vedic-sanskrit culture of the north with the social and religious pattern of life in south India when the sangam classics were in the making… The vedas and their preservers, the bra_hmans, are frequently referred to with reverence (*Pur.ana_n u_r.u* 6, 15 and 166; *Maturaikka_ñci* 468; *tirukat.ukam* 70, *na_n-man.ikkat.ikai* 89, *initu-na_r.patu* 8). The vedic mantra is stated as the exalted expressions of great sages (*Tolka_ppiyam*, Porul. 166, 176). While the great God S'iva is referred as the source of the four vedas (*Pur.a*. 166), it is added that the twice-born (bra_hman) learnt the four vedas and the six veda_ngas in the course of 48 *years (Tiru-muruka_r.r.uppat.ai,* 179-82). The vedas were not written down but were handed down by word of mouth from teacher to pupil (*Kur-untokai* 156), and so was called kel.vi (lit. what is heard, šruti)(*Patir.r.ippattu* 64.4-5; 70.18-19; 74, 1-2; *Pur.a*. 361. 3-4). The bra_hmans realized God through *the vedas (Paripa_t.al 9. 12-13) and recited loftily in vedic schools (Maturaikka_ñci* 468-76; 656)… the danger to the world if the bra_hman discontinued the study of the veda is stressed in *tirukkur.al*. 560. If the sangam classics are any criteria, the knowledge and practice of vedic sacrifices were very much in vogue in early south India. The sacrifices were performed by bra_hmans strictly according to the injunctions of the vedic mantras (*tirumuruka_r.r.uppat.ai* 94-96;

kalittokai 36). The three sacred fires (*ga_rhapatya, a_havani_ya* and *daks.ina_gni*) were fed at dawn and dusk by bràhmans in order to propitiate the gods (*Kalittokai* 119l *Pur.a*. 2; 99; 122; *Kur.iñcippa_t.t.u* 225). *Paripa_t.al* 2. 60-70 stipulates, in line with vedic sacrificial texts, that each sacrifice had a specific presiding deity, that pas'us (sacrificial animals) were required for the sacrifice and that the sacrificial fire rose to a great height. The vedic practice of placing a tortoise at the bottom of the sacrificial pit is referred to in Akana_n-u_r.u 361... *Patir.r.uppattu* 64 and 70 glorify the Cera king Celvakkat.unkovar..iya_tan- who propitiated the gods through a sacrifice performed by learned vedic scholars and distributed profuse wealth amongst them. Another Cera king, Perum-ceral Irumpor.ai is indicated in Patir.r.uppattu 74 to have performed the Putraka_mes.t.hi_ sacrifice for the birth of his son il.amceral irumpor.ai. The Cola ruler Peru-nar.kil.l.i was renowned as Ra_jasu_yam ve_t.t.a co_r..an- for his having performed the ra_jasa_ya sacrifice; another Cola ruler Nar.kil.l.i, too, was celebrated as a sacrificer (*Pur.a*. 363; 400). The Cola kings were also considered to have descended from the north Indian king S'ibi the munificent of *Maha_bha_rata* fame (*Pur.a*. 39; 43). The patronage accorded to vedic studies and sacrifices is illustrated also by the descriptive mention, in *Pur.a*. 166, of a great vedic scholar Vin.n.anta_yan- of the Kaun.d.inya-gotra who lived at Pu_ñja_r.r.u_r in the Co_r..a realm under royal patronage. It is stated that Vin.n.anta_yan- had mastered the four vedas and six veda_ngas, denounced non-vedic schools, and performed the seven pa_kayajñas, seven ***Soma***-yajñas and seven havir-yajñas as prescribed in vedic texts. The Pa_n.d.yan kings equalled the Colas in the promotion of Vedic studies and rituals. One of the greatest of Pa_n.d.ya rulers, Mudukut.umi Peruvar..uti is described to have carefully collected the sacrificial materials prescribed in vedic and dharmašàstra texts and performed several sacrifices and also set up sacrificial posts where the sacrifices were performed (*Pur.a*. 2; 15). *Maturaikka_ñci* (759-63) mentions him with the appellation pal-s'a_lai (pal-ya_ga-s'a_lai of later Ve_l.vikkud.i and other inscriptions), 'one who set up several sacrificial halls'. The Pa_n.d.ya rulers prided themselves as to have descended from the Pa_n.d.avas, the heroes of Maha_bha_rata (*Pur.a*. 3; 58; *Akana_n-u_r.u* 70; 342)... God Brahmà is mentioned to have arisen, in the beginning of creation, with four faces, from the lotus navel of God Vis.n.u (*Paripa_t.al* 8.3; *Kalittokai* 2; *Perumpa_n.a_r.r.uppat.ai* 402-04; *Tirumuruka_r.r.uppat.ai* 164-65; *Iniyavai-na_rpatu* 1). It is also stated that Brahma_ had the swan as vehicle (*Innà-nàrpatu* 1). Vis.n.u is profusely referred to. He is the lord of the Mullai region (Tol. Akattin.ai 5) and encompasses all the Trinity (*Paripa_t.al* 13.37). He is blue-eyed (Pur.a. 174), lotus-eyed (*Paripa_t.al* 15.49), yellow-clothed (*Paripa_t.al* 13.1-2), holds the conch and the discus in his two hands and bears goddess Laks.mì on his breast (*Mullaippa_t.t.*u 1-3; *Perumpa_n.* 29-30; *Kali*. 104; 105; 145), was born under the asterism Tiru-o_n.am (*Maturai*. 591), and Garud.a-bannered (*Pur.a*. 56.6; *Paripa_t.al* 13.4). Of Vis.n.uite episodes are mentioned his measuring the

earth in three steps (*Kali*. 124.1), protecting his devotee Prahla_da by killing his father (*Pari*. 4. 12-21) and destroying the demon Kes'in (*Kali*. 103.53-55). S'iva has been one of the most popular vedic-pura_n.ic gods of the South. According to *Akana_n-u_r.u* 360.6, S'iva and Vis.n.u are the greatest gods. He is three-eyed (*Pur.a*. 6.18; *Kali*. 2.4), wears a crescent moon on his forehead (*Pur.a*. 91.5; *Kali*. 103.15), and holds the axe as weapon (*Aka*. 220.5; *Pur.a*. 56.2). He bears river Ganga_ in his locks (*Kali*. 38.1; 150.9) and is blue-necked (*Pur.a*. 91.6; *Kali*. 142). He is born under the asterism *a_tirai* (Skt. *àrdra*) (Kali. 150.20), has the bull for his vehicle (*Paripa_t.al* 8.2) and is seated under the banyan tree (*Aka*. 181). Once, while sitting in Kaila_sa with Uma_ (Pa_rvati), his consort (*Pari*. 5.27-28; *Par..amor..i* 124), Ra_van.a, the ra_ks.asa king shook the Kaila_sa and S'iva pressed the mountain down with his toe, crushing Ra_van.a and making him cry for mercy (*Kali*. 38). When the demon Tripura infested the gods, S'iva shot through the enemy cities with a single arrow and saved the gods (*Kali*. 2; Pur.a. 55; Paripa_t.al 5. 22-28). *Pur.ana_n –u_r.u* (6. 16-17) refers also to S'iva temples in the land and devotees walking round the temple in worship. God Skanda finds very prominent mention in saµgam classics, but as coalesced with the local deity Murukan-, with most of the pura_n.ic details of his birth and exploits against demons incorporated into the local tradition (*Paripa_t.al* 5. 26-70; *Tirumuruka_r.r.uppat.ai*, the whole work). Mention is also made of Indra. (Balara_ma) is mentioned as the elder brother of Lord Kr.s.n.a, as fair in colour, wearing blue clothes, having the palmyra tree as his emblem and holding the ;lough as his weapon, all in line with the pura_n.as (*Paripa_t.al* 2. 20-23; *Pur.a*. 56. 3-4; 58.14; *Kali*. 104, 7-8). *Tolka_ppiyam* (Akattin.ai iyal 5) divides the entire Tamil country into five, namely, Mullai (jungle) with Vis.n.u as its presiding deity, Kur.iñji (hilly) with Murukan- as deity, Marutam (plains: cf. marusthali_ Skt.) with Indra as deity, Neytal (seashore) with Varun.a as deity and Pa_lai (wasteland) with Kor.r.avai (Durga_) as deity… The sangam works are replete with references to the four castes into which the society was divided, namely, bra_hman.a, ks.atriya, vais'ya, and su_dra… bra_hman antan.a primarily concerned with books (*Tol. Mara*. 71), the ks.atriya (***a-ras'a, ra_ja***) with the administration (*Tol. Mara*. 78) and s'u_dra with cultivation (*Tol. Mara*. 81)… It is also stated that marriage before the sacred fire was prescribed only for the first three castes; but the author adds that the custom was adopted by the fourth caste also in due course (*Tol. Kar.piyal* 3)… one cannot fail to identify in sangam poetry the solid substratum of the distinct style, vocabulary and versification, on the one hand, and the equally distinct subject-matter, social setting and cultural traits, on the other, both of the Tamil genius and of vedic poetry. As far as the grammar of Dravidian is concerned, a detailed analytical study of Old Tamil as represented in *Tolka_ppiyam*, with the vedic s'iks.a_s and pra_tis'a_khyas, has shown that, 'Tolka_ppiyan-a_r clearly realized that Tamil was not related to Sanskrit either morphologically or genealogically… that he deftly exploited the ideas contained in the earlier

grammatical literature, particularly in those works which dealt with vedic etymology, without doing the least violence to the genius of the Tamil language'. (Sastri, P.S.S., *History of Grammatical Theories in Tamil and their relation to the Grammatical literature in Sanskrit*, Madras, 1934, p. 231)... It would be clear from the foregoing that during the sangam age there had already been intensive infusion of vedic culture in south India... Both the cultures coexisted, the additions often affecting only the upper layers of society... For novel names, concepts and ideas, the Sanskrit names were used as such, with minor changes to suit the Tamil alphabet (e.g. akin-i for agni, vaicikan- for vais'ya, veta for veda, or translated (e.g. pa_pa_n- for dars'aka, ke_l.vi for s'ruti). When, however, the concept already existted, in some form or other, the same word was used with extended sense (e.g. ve_l.vi for ya_ga; ma_l or ma_yan- for Vis.n.u). Sometimes both the new vedic and extant Tamil words were used (e.g. ti_ for agni)... It is, however, important to note that the coming together of the two cultures, vedic and dravidian, was smooth, non-agressive and appreciative, as vouched for by the unobtrusive but pervasive presence of vedicism in the sangam works. The advent of vedic culture into South India was, thus, a case of supplementation and not supplantation... it is a moot question as to when vedic culture first began to have its impact on dravidian culture which already existed in south India... the age of this spread (of vedic culture) has to be much earlier than the times of the Ra_ma_yan.a and Maha_bha_rata, both of which speak of vedic sages and vedic practices prevailing in the sub-continent. Literary and other traditions preserved both in north and south India attest to the part played by sage Agastya and Paras'ura_ma in carrying vedic culture to the south. On the basis of analytical studies of these traditions the identification of geographical situations and a survey of the large number of Agastya temples in the Tamil country, G.S. Ghurye points to the firm establishment of the Agastya cult in South India by the early centuries before the Christian era (Ghurye, G.S., *Indian acculturation: Agastya and Skanda*, Bombay, Popular Prakashan, 1977)... the considerable linguistic assimilation, in dravidian, of material of a pre-classical Sanskrit nature, it would be necessary to date the north-south acculturation in India to much earlier times."

The migrations away from the desiccated Sarasvati River, alluded to earlier explain the distribution of smaller size settlements, for example, in the Ganga-Yamuna doab (OCP, Black and Red ware and PGW ware) and in the regions on the right bank of Sindhu in Baluchistan and Afghanistan. The memory of the Sarasvati River was carried by these migrants; for example, there is a river called Haraquaiti in Afghanistan, and there are the rivers called Sarasvati in Pushkar, Rajasthan and Sarasvati which joins the Little Rann of Kutch in Gujarat. The local traditions in almost all parts of Bharat is that when two rivers join, the san:gamma is called triven.i san:gamam; how can this be? Where is the third river? The answer is simple; the third river is the Sarasvati river which flows underground! That Sarasvati River did flow underground is now established as a

groundtruth by earth scientists. In Jaisalmer, the scientists of Bhabha Atomic Research Centre found that the deep water wells (30 m. deep) in Jaisalmer area contained water from the Himalayas flowing through underground channels, called aquifers, and dated to over 8000 years Before Present. Astonishingly, the water table remains the same in deep wells in the Jaisalmer area, even after drawing down the water through the tubewells and even during summer.

5. Chronology of Vedic Age and Sarasvati Sindhu Civilization

Vedic Age relates to the period when the r.cas of the R.gveda were composed (as distinct from the time when the r.cas were compiled into Sam.hitas). According to Matsya Pura_n.a, there was only one Veda and later occurred the arrangement into four Vedas and the evolution of s'a_khas (which are also referred to as caran.a or bheda) in consonance with the development of the Vedic tradition. **Eko vedas'catus.pa_dah sam.hr.tya tu punah punah** (Matsya 143.10). There are also anus'a_khas or upas'a_khas which indicate the further development of the s'a_khas. (**ityeta_h pratis'a_kha_bhyo hyanus'a_kha_ dvijottama**: Vis.n.u P. III,4.25). The s'a_khas are books enshrining particular traditions (the Sam.hita_, Bra_hman.a and Su_tra traditions) which have been nurtured as sva_dhya_ya (consisting of mantra and bra_hman.a) and transmitted orally from generation to generation to regulate the performance of yajn~a. Many s'a_khas were locality specific. "That the Ka_n.va Sam.hita_ was prevalent in Kuru-country, is known from the line – **es.a vah kuravo ra_ja_.** Its equivalent in the Taittiri_ya S'a_kha_ is **es.a vo bharato ra_ja_**." (Ganga Sagar Rai, 1990, *Vedic S'a_khas*, Varanasi, Ratna Publications).

It will be apposite to recall the balanced views expressed by Maurice Winternitz in the context of Indian literary tradition in his work, *A History of Indian Literature*.

> "…The *historical* facts and hypotheses, such as mention of Vedic gods in the cuneiform inscriptions, and the relationship of Vedic antiquity to the A_ryan (Indo-Iranian) and Indo-European period, are so uncertain in themselves that the most divergent and contradictory conclusions have been drawn from them. Nevertheless, we have now such likely evidence of relations between ancient India and western Asia penetrating as far west as Asia Minor in the second millennium B.C., that Vedic-culture can be traced back *at least* to the second millennium B.C…The linguistic facts, the near relationship between the language of the Veda and that of the Avesta on the one hand, and between the Vedic language and classical Sanskrit on the other, do not yield any positive results…As all the external evidence fails, we are compelled to rely on the *evidence arising out of the history of Indian literature itself*, for the age of the Veda. The surest evidence in this respect is still the fact that Pa_rs'va, Maha_vi_ra and Buddha pre-suppose the entire Veda as a literature to all intents and purposes completed, and this is a limit which we must not exceed. We cannot, however, explain the development of the whole of this great literature, if we assume as late a

date as round about 1200 BC or 1500 BC as its starting-point. We shall probably have to date the beginning of this development about 2000 or 2500 BC, and the end of it between 750 and 500 BC. The more prudent course, however, is to steer clear of any fixed dates, and to guard against the extremes of a stupendously ancient period or a ludicrously modern epoch." (Maurice Winternitz, 1907, *Geschichte der Indischen Literatur*, tr. *A History of Indian Literature*, 1981, Delhi, Motilal Banarsidass, pp. 287-288).

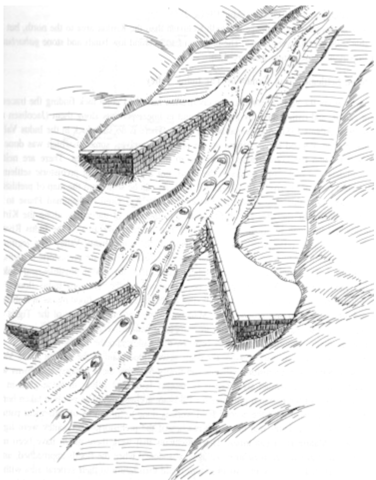
"Parikshit appears in a famous laud of the Twentieth Book of the Atharva Veda Sam.hita_ (AV 20.127.7.10) as a king of the Kurus (kauravya) whose kingdom (ra_s.t.ra) flowed with milk and honey…in the Aitareya and S'atapatha Bra_hman.as the famous king Janamejaya bears the patronymic Pa_rikshita (son of Parikshit). The Aitareya Bra_hman.a (VIII.21), for example, informs us that the priest Tura Ka_vasheya 'annointed Janameja Pa_rikshita with the great anointing of Indra." (**etena ha va_ aindren.a maha_bhisheken.a turah ka_vasheyo janamejayam pa_rikshitam abhishishecha**)…the realm of the Kurus over which Parikshit ruled. The kingdom, according to epic tradition, stretched from the Sarasvati_ to the Ganges. In the Digvijaya-parva it is taken to extend from the border of the land of the Kulindas (near the sources of Sutlej, the Jamuna and the Ganges) to that of the Su_rasenas and the Matsyas (in the Mathura_ and Baira_t. regions respectively), and from the frontier of Rohi_taka (Rohtak in the Eastern Punjab) to that of the Pan~cha_las (of Rohilkhand). It was divided into three parts, Kuruja_n:gala, the Kurus proper and Kurukshetra (MBh. I. 109.1). Kuruja_n:gala, as its name implies, was probably the wild region of the Kuru realm that stretched from the Ka_myaka forest on the banks of the Sarasvati_ to Kha_n.d.ava near (sami_patah) the Jamuna. (MBh. III.5.3)…The Kurus proper were probably located in the district around Hastina_pura (on the Ganges), identified with a place near Meerut. The boundaries of Kurukshetra are given in a passage of the Taittiri_ya Aran.yaka (Vedic Index I. Pp. 169-70) as being Kha_n.d.ava on the south, the Tu_rghna on the north, and the Pari_n.ah on the west (lit. hinder section, jaghana_rdha). The Maha_bha_rata (MBh. III.83.4) gives the following description of Kurukshetra: 'South of the Sarasvati_, and north of the Drishadvati_, he who lives in Kurukshetra really dwells in heaven. The region that lies between Taruntuka and Marantuka or Arantuka, the lakes of Ra_ma and Machakruka (Machakruka, Taruntuka and Marantuka are Yaksha dva_rapa_las guarding the boundaries of Kurukshetra)—this Kurukshetra which is also called Sa_manta pan~caka and the northern sacrificial altar (uttara vedi) of the grandsire (i.e. Brahma_).' Roughly speaking, the Kuru kingdom corresponded to modern Thanesar, Delhi and the greater part of the Upper Gangetic Doa_b. Within the kingdom flowed the rivers Arun.a_ (which joins the Sarasvati_ near Pehoa), Am.s'umati_, Hiran.vati_, A_paya_ (A_paga_ or Oghavati_, a branch of the Chitang), Kaus'iki_ (a branch of the Rakshi_), as well as the Sarasvati_ and the Drishadvati_ or the Rakshi_. (MBh. III.83.95.151; V.151.78). Here, too, was situated Saryan.a_vat, which the authors of the Vedic Index consider to have been a lake, like that known to the S'atapatha Bra_hman.a by the name of Anyatahplaksha_…According to the epic tradition the kings of

Kurukshetra belonged to the Puru-Bharata family. The Paurava connection of the Kurus is suggested by the Rigvedic hymn (10.33.4) which refers to 'kuru-s'ravan.a' (lit. glory of the Kurus) as a descendant of Trasadasyu, a famous king of the Pu_rus. (RV. 4.38.1; 7.19.3). The connection of the Bharatas with the Kuruland is also attested by Vedic evidence. A Rigvedic ode (RV 3.23) speaks of the two Bha_ratas, Devas'ravas and Devava_ta, as sacrificing in the land on the Drishadvati_, the A_paya_ and the Sarasvati_. Some famous ga_tha_s of the Bra_hman.as and the epic tells us (S'Br. 13.5.4.11; Ait. Br. 8.23; MBh. 7.66.8) that Bharata Dauhshanti made offerings on the Jamuna, the Ganges (Yamuna_m anu Ga_n:ga_ya_m) and the Sarasvati_. [The Dasyu of the Bra_hman.a period are: Andhras, S'abaras (Savaris of Gwalior and Sauras of Vizagapatam), Pulindas (of Bundelkhand) and Mu_tibas (? Of Musi river near Hyderabad Deccan): *Aitareya Bra_hman.a 7*.18]. The territory indicated in these laudatory verses is exactly the region which is later on so highly celebrated as the Kurukshetra...Among theose kings who are mentioned in the genealogical lists of the Maha_bha_rata as ancestors and predecessors of Parikshit (A_diparva, ch. 94 and 95), the names of the following occur in the Vedic literature: Puru_ravas Aila (RV. 10.95), A_yu (RV 1.53.10; 2.14.7), Yaya_ti Nahushya (RV 1.31.17; 10.63.1), Pu_ru (RV 7.8.4; 18.13), Bharata Dauhshanti Saudyumni (S'Br. 13.5.4; Ait. Br. 8.23), Ajami_d.ha (RV 4.44.6), R.iksha (RV 8.68.15), Sam.varan.a (RV 8.51.1), Kuru (RV 10.33.4), Uchchaihs'ravas (Jaimini_ya Upanis.ad Br. 3.29.1-3), Prati_pa Pra_tisatvana or Pra_ti sutvana (AV 20.129.2), Balhika Pra_tipi_ya (S'Br. 12.9.3.3), S'am.tanu (RV 10.98) and Dhr.itara_s.t.ra Vaichitravi_rya (Ka_t.haka Sam.hita_ 10.6)."(H.Raychaudhuri, 1972, *Political History of Ancient India*, 7th edn., Calcutta, University of Calcutta, pp. 11-22).

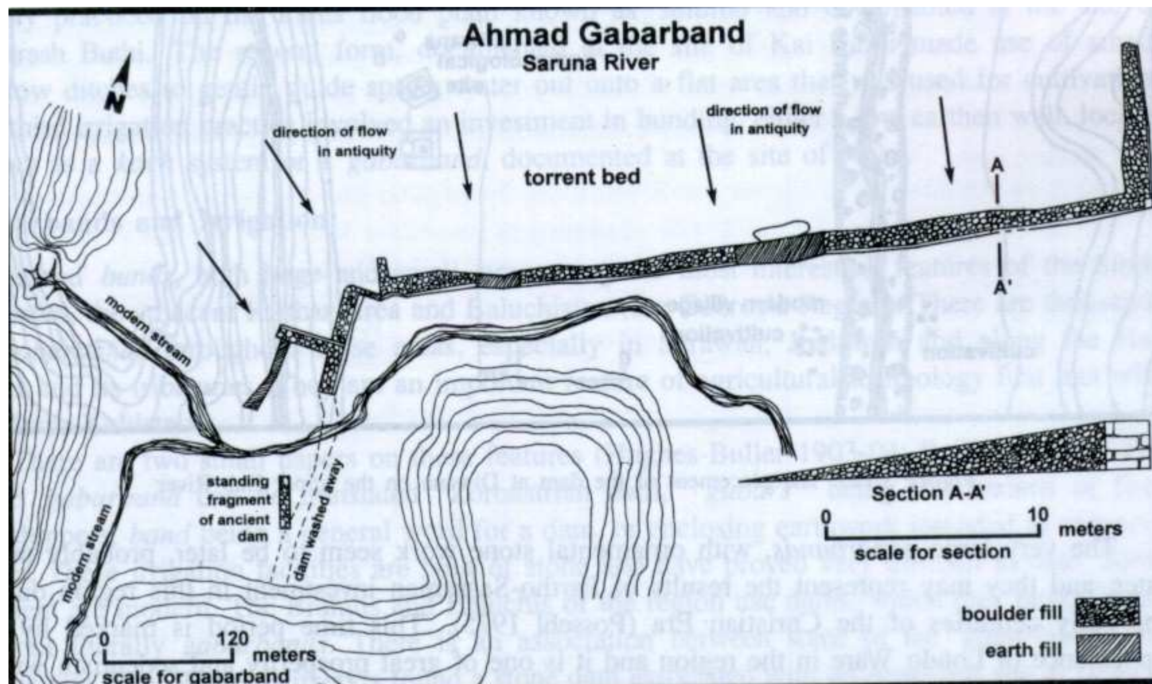
Saryan.a_vat is the source for naming the present-day State of Haryana. Sarasvati_ River was the domain of the Bharatas.

Puru_ravas Aila is mentioned only the tenth man.d.ala of the Rigveda and may denote a later-day king. The epic tradition (Ra_m. 7.103,21-22) notes that Aila is the son of a ruler who migrated from Ba_hli in Central Asia to mid-India. MBh. 3.90-22-25 located the birth place of Puru_ravas on a hill near the source of the Ganges. The Ba_hli (or ila_vr.tavars.a) associated with the Ka_rddma kings may relate to the areas close to Gan:gotri and may not connote a reference to Bactria in the Oxus valley. "...the *Papan~cha su_dani* refers to the Kurus—the most important of the Ailas according to the Maha_bha_rata and the Pura_n.as—as colonists from the trans-Hima_layan region known as Uttara Kuru. (Law, Ancient Mid-Indian Ks.atriya Tribes, p. 16)...In the Aihole Inscription of Raviki_rti, panegyrist of Pulakes'in II, dated S'aka 556 (expired) = AD 634-35, it is stated that at that time 3735 years had passed since the Bha_rata war: **trim.s'atsu tri-sahasreshu bha_rata_d a_hava_d itah sapta_bda-s'ata-yukteshu gateshvabdeshu pan~chasu** (Ep. Ind. VI, pp. 11,12). The date of the Bha_rata war which almost synchronized with the birth of Parikshit, is, according to this calculation and the testimony of A_ryabhat.a (A.D. 499), 3102 BC. This is the starting point of the so-called Kali-yuga era." (Raychaudhuri, opcit., p. 24).

‘Kva pa_rikshita_ abhavan (whither have the Pa_rikshitas gone)?’ asks Bhujyu La_hya_yani; Yajn~avalkya responds: ‘Thither where the performers of the horse sacrifice abide.’ (Br.ihad. Upanis.ad, 3.3.1). This is clearly a reference to the continuing tradition of the as’vamedha in the Ganga-Yamuna doa_b and does not seem to refer to the haoma practices of the Avestan group who might have moved north-west to eastern Iran and moved to the right-banks of Sindhu river. An extraordinary evidence linking the R.gvedic references to the fire-workers echoed as fire-worshippers in the Zoroastrian faith and the emergence of the Bronze Age civilization along the Sarasvati and Sindhu River Basins is provided by the thousands of *gabarbands* constructed on many rivers, most of them perhaps datable to ca. 3500 BC. The importance of the ‘fire-workers’ in the civilization is enshrined in the term used in Sindh: the *gabarband*. Gabarband means, literally, ‘Zoroastrian dam’; gabar = Zoroastrians or fire-worshippers; band = dam or an stone enclosure used to contain or redirect water as an irrigation facility. (For a discussion on the semantics of ‘gabar’ cf. Balfour, E., 1885, *The Cyclopaedia of India: And of Eastern and Southern Asia, commercial, industrial and scientific.* 3 Vols., 3rd edn. London: Bernard Quaritch). Gabarbands, in thousands, are found in Sindh Kohistan, Kirthar and Baluchistan (Gedrosia) regions. They dominate the riverine courses in Sarawan, Jhalawan and along the Hab River. It is noted that gabarband is an ancient technology and began in thee first half ot the third millennium BC. (Louis Flam, 1981, *The Palaeogeography and Prehistoric Settlement Patterns in Sind, Pakistan (4000-2000 BC)*. PhD Dissertation, University of Pennsylvania.



Ahmad Gabarband in the Saruna Valley (After Hughes-Buller 1903-04, Gabarbands in Baluchistan. *Annual Report of the Archaeological Survey of India, 1903-04*: 194-201: Pl. LXI; and Possehl, G.L., 1999, Fig. 3.127). Parthians and Sassanians were also gabars, or fire-worshippers. The L-shaped gabarbands are stone dams built not as full-scale dams but to check and (using the wings of the stone walls to) re-direct the flood waters into the gabarband catchment area, so that alluvium could be build up behind the bands (or dams) creating fertile agricultural fields of upto about two hectares in size.Gabarbands aligned to contain water and to create alluvial tracts (After Possehl, G.L., 1999, Fig. 3.128).



"Gabar. Pers. A person not a Mahomedan, in general, but commonly a Zoroastrian, a Parsee or fire-worshipper; an idol-worshipper, an infidel; any unbeliever in Mahomedanism in general; but the word is more specially applied to a fire-worshipper. Meninski says, ''Ignicola, magus infidelis quivis paganus'. The word is more familiar to the people of Europe under the spellings Gaour and Geuebre. A small remnant of fire-worshippers exists in Persia, chiefly at Yezd in Khorasan; but most of their countrymen have emigrated to India, where, especially at Bombay, they flourish under the name of Parsee. According to the dictionary, Burhan-I-Kattea, Gabar is used in the name of Magi, which signifies a fire-worshipper, Gabar man-I-Magh bashad, keh atash purust ast, i.e., Gabar means a Magh, which is a fire-worshipper. This is sometimes written, and very often pronounced, Gavr, by a change of letters frequent in Persian, as in other languages. Gavr, we learn from the dictionary Jahangiri, means those fire-worshippers who observe the religion of Zardusht (or Zoroaster), and they are also called Magh. But Origen, in the 3rd century, defending Christianity against Celsus, an Epicurean, who had alluded to the mysteries of Mithra, uses Kabar as equivalent to Persians. "Let Celsus know,' says he, 'that our prophets have not borrowed anything from the Persians or Kabirs' (Orig. contr. Cels. Lib. vi. p.291, Cantab. 1658). A Jewish writer, quoted by Hyde (Hist. Relig. Vet. Pers., cap. xxix), declares that the Persians call their priests (in the plural) Chaberin (or Khaberin), whilst the singular, Chaber or Khaber (occurring in the Talmud), is explained by Hebrew commentators as signifying Parsai or Persians…Dr. Hyde, however, as above cited, thinks that Chaber or Chaver denoted both a priest and a layman. There can be no doubt that the usages of a people which regard their dead are important evidences of the faith professed by

them, or, if not clearly indicating it, that they may show what faith is not professed. The semi-exposure adopted by the Siah-posh has contributed probably to their being suspected to be a remnant of the Gabar, or followers of the reformer Zartusht, but no account has been heard of the least mention of fire-worship amongst them. There is the certainty that within the last three centuries there were people called Gabar in the Ka_bul countries, particularly in Lughman and Bajur; also that in the days of Baber there was a dialect called Gabari. We are also told that one of the divisions of Kafiristan was named Gabrak, but it does not follow that the people called Gabar then professed the worship of fire. That in former times fire-worship existed to a certain, if limited, extent, in Afghanistan, is evidenced by the pyrethrae, or fire-altars, still crowning the crests of hills at Gard-dez, at Bamian, at Seghan, and at other places. Near Bamian is a cavern, containing enormous quantities of human bonesf, apparently a common receptacle of the remains of Gabar corpses; and to the present day the Parsees expose their dead on tower summits, but Tibetans, Chinese and Hindus often lay their dead on plains or in rivers. At Murki Khel, in the valley of Jalalabad, and under the Safed Koh, human bones are so abundant on the soil that walls are made of them. There is every reason to suppose it a sepulchral locality of the ancient Gabar; coins are found in some number there—*Ouseley's Travels*, I, p. 150." (Balfour, E., 1885, *The Cyclopaedia of India: And of Eastern and Southern Asia, commercial, industrial and scientific*. 3 Vols., 3rd edn. London: Bernard Quaritch, p. 1158).

The concordant terms, Chaber, Chaver mentioned in this entry in Balfour's cyclopaedia provide a lead to the identification of the fire-worshippers. Dr. Rhys Davids locates Sauvi_ra to the north of Kathiawar and along the Gulf of Kach (*Buddhist India*, Map facing p. 320, and *Bha_gavata*, V, ch. 10; I, ch. 10, v.36); Alberuni equates Sauvi_ra with Multan and Jahrawar (*Alberuni's India*, vol. I, pp. 300, 302: Sauvi_ra includes the littoral as well as the inland portion lying to the east of the Sindhu as far as Multa_n, with the capital city called Vitabhaya, according to Jaina *Pravachanasa_roddha_ra*). Ma_rkan.d.eya Pura_n.a (ch. 57) notes that Sindhu and Sauvi_ra are in the northern part of India and close to Gandha_ra and Madra. Rapson identifies Sauvi_ra with Sindh province (*Ancient India*, p. 168). One conjecture is that Sauvi_ra was the Sophir or Ophir mentioned in the Bible. "Part of the modern territory of Sind may have been included in Sauvi_ra whose southern limits undoubtedly reached the sea, because the *Milinda-Pan~ho* mentions it in a list of countries where 'ships do congregate'…In Skandapura_n.a (*Prabha_sa-kshetra Ma_ha_tmya*, Ch. 278), referring to the famous temple of the Sun at Mu_la-stha_na or Multajn_n, says that stood on the banks of the river Devika_…In the Agnipura_n.a (Ch. 200), the Devika_ is brought into special relations with the realm of Sauvi_ra (sauvi_rara_jasya pura_ maitreyobhu_t purohitah tena ca_yatanam vis.n.oh ka_ritam devika_tat.e)…Kachcha had come under the sway of the Great Satrap (Rudrada_man) as early as 130 A.D…" (Raychaudhuri, H., 1972, *Political History of Ancient India*, 7th edn., Calcutta, University Press, pp. 544-547).

The Gabars or fire-worshippers were Sauvi_ras. The discovery of 'fire-altars' in the archaeological sites of regions east and west of Sindhu River Basin (cf. the fire-pits of hundreds of sites in Bahawalpur province), on the banks of the Sarasvati River and in Kalibangan, Banawali (both located on the banks of the Sarasvati River) and Lothal (perhaps an outfall area of the Sarasvati River, linking with the Nal Sarovar south of the Little Rann of Kutch) dated to the 3rd millennium BC is a clear indication of the dominance of the fire-worship in the entire Sarasvati River Basin. This is an affirmation of the myth of vad.ava_nala fire carried by the Sarasvati River as people moved eastward and westward with progressive desiccation of the mighty river.

Bhagwan Singh notes (Bhagwan Singh, 1995, *The Vedic Harappans,* New Delhi, Aditya Prakashan, p. 224) that the term revata_ used in the context of Pan.is may be related to the mount Revand mentioned in reference to Vis'ta_spa: "When Zoroaster brought the religion...Vis'ta_spa put the a_dar-burzenmihr on its cultic place on mount Revand, which is also called pus't-e-Vis'taspa_n that is revant of Yt. 19.6...This Revand—another one lies not far south—is situated northwest of Nishapur, not far from Tos, near the turquoise mines (Herzfeld, Ernst, 1947, *Zoroaster and His World*, Princeton, I, 81-82). The Revand is a mountain in Khorasan on which the Burzin fire is settled. (*Avesta*, Bund. 12.18; Sirrozah 1.9).

Suniti Kumar Chatterji notes that the Latvian writer, Fr. Malbergis, wrote in 1856 that the Latvians like the Russians and Germans came from the banks of the Ganga. The Latvian tradition is that a wise people, Burtnieks brought all science and knowledge to Latvia from India. The tradition further holds that Videvuds was a teacher of this profound wisdom. The Vaidilutes, the old Lithuanian priestesses tended the sacred fire as part of the Old Indo-European Balt religious rite and a modern Lithuanian poet suggested that this fire arrived in Lithuania from the banks of Ind. (Chatterji, S.K., 1968, *Balts and Aryans in their Indo-European Background,* Simla, pp. 23-24).

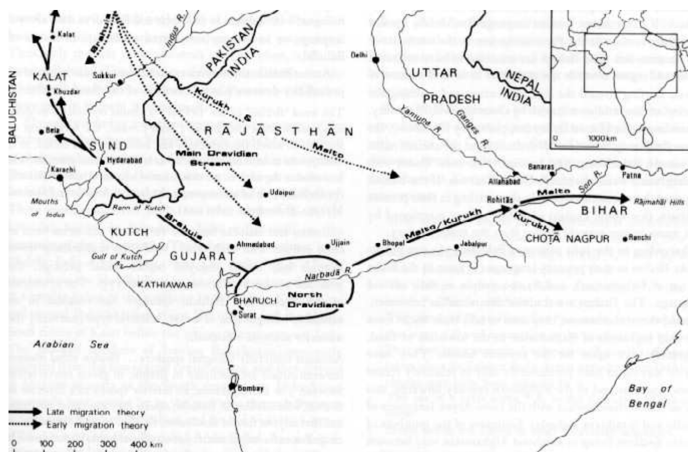
Alfred Hillebrandt argues that the degradation of the term asura- (from its basic meaning 'lord' to the meaning of 'evil spirit') occurred because of the encounters between Indians and Iranians after their separation, but fore Zarathus'tra's reform. He adds that the phrase he 'lavo attributed to the asuras in the S'atapatha Bra_hman.a indicates that Indian enemies from the east are also included among asuras, since this phrase would be a Prakrit form from that area. (Alfred Hillebrandt, *Vedische Mythologie,* 3 vols., Breslau, Verlag von M. and H. Marcus, 1902, vol 2., p. 440). The following Indic etyma may explain the use of the term he 'layo: halla_ = tumult, noise (P.Ku.N.B.Or.H.); halphal = shaking, undulation (A.)(CDIAL 14017). Hallana = tossing about (Skt.); hallai – moves (Pkt.); alun = to shake (K.) ale, alaku = to shake (Ka.)(CDIAL 14003; 14918). Hillo_la = wave (Skt.); hillo_layati = swings, rocks (Dha_tup.); hilorna_ = to swing, rock to and fro (H.); hilolai = shakes (OMarw.)(CDIAL 14121). Hillo = a jerk, a shake; a push; a shock; hello = a jolting of a carriage (G.) helao = to move, drive in (Santali). The semantics, 'rocking to and fro' and 'wave' point to sailing on high seas. This is

authenticated by a Tamil lexeme: e_le_lo = a word that occurs again and again in songs sung by boatmen or others while pulling or lifting together; e_le_lan- = name of a Chola king; e_lappa_t.t.u = boatmen's song in which the words e_lo_, e_le_lo occur again and again (Ta.lex.) This leads to a possible interpretation of some of the mlecchas, who shout, 'he 'lavo, he 'lavo', as 'sea-farers' and is consistent with the evidence of economic texts from Mesopotamia which point to extensive trade relations with 'meluhha', which is generally equated with the Indic civilization area.

S.C.Roy notes that Mun.d.as have a tradition that India was previously occupied by a metal-using people called Asuras. One tribe of the Mun.d.a group are called Asuras today. (Rai Bahadur S.C. Roy, The Asuras—ancient and modern, *The Journal of the Bihar and Orissa Research Society*, 12, 1926, 147). This analysis is consistent with the characterization of asura- with creative activity. Considering the sea-faring merchants of Indic civilization had traded in metals and ores over an extensive area and the evolution of the bronze-age, ca. 3500 B.C. in the region with the invention of alloying copper with tin to yield bronze and manufacture of hardened metallic weapons and tools, the dominant 'lordship' of the civilization would have rested with the people with asuric or creative capabilities, who were later identified as a group of people called 'asuras'.

Vedic age was a peaceful age and the devas respected the asuras as their neighbours; indeed, the devas even worshipped the asuras for their superior power:

> **yatha_ deva_ asures.u s'raddha_m ugres.u cakrire (RV 10.151.3)**
> "Just as the devas rendered faithful worship to the powerful asuras..."



Two views of the formation of North Dravidian. After Elfenbein, J.H., 1987, A periplous of the 'Brahui problem', Studia Iranica, 16; pp. 215-33. This pattern of separation of the Brahuis is consistent with the suggestion earlier made by Jules Block that the Brahuis came to Baluchistan from South or Central India where other cognate languages were spoken. The vocabulary of Brahui is strongly influenced by Sindhi and Siraiki

with substrate Indic words which find many cognates in Marathi, Gujarati and Kurukh languages; these verily constitute the substram Pra_kr.ts which influenced Vedic Sanskrit with words such as khala (threshing floor), la_n:gala (plough)..

H. Skold argued that asura could not have been derived from as's'ur. If the derivation were true, the s' in as's'ur should appear in Sanskrit as s' and in Avestan as s, not as the s and h we have in asura- and ahura-.(Hannes Skold, Were the Asuras Assyrians? *The Journal of the Royal Asiatic Socierty of Great Britain and Ireland*, April 1924, pp. 265-7). Von Bradke suggested that asura- could derive from as, 'to be', or ans, 'to support', perhaps the latter. (P.von Bradke, Beitrage zur altindischen Religions – und Sprach-geschichte, *Zeitschrift der Deutschen Morgenlandischen Gesellschaft*, 40, 1886, 347-8). Polome connects as's'ura with Hittite has's'us, which means king. (E.Polome, L'etymologie due terme germanique *ansuz 'dieu soverain', *Etude Germanique*, 8, 1953, 41). Schlerath analyzes asura as as-ura and derives Avestan ahu- and ahura-, Indic asura-, Hittite has's'u and Latin erus from reconstructed root *axs- meaning 'beget'. (Bernfried Schlerath, Altindisch asu-, Awestisch ahu- und a_hnlich klingende Worter, in: *Pratida_nam: Indian, Iranian and Indo-European Studies presented to Franciscus Bernardus Jacobus Kuiper on his Sixtieth Birthday*, ed., by J.C. Heesterman, G.H. Schoker, and V.I. Subramoniam, The Hague, Mouton, 1968, p. 146). Hale proposes an alternative to Schlerath's etymology by suggesting an Indo-European *Hesu- from which came Avestan ahu- 'lord' and Hittite has's'u 'king' and an Indo-Iranian derivative of this word, *asura- from which Avestan ahura- and Vedic asura- derive.. (Wash Edward Hale, opcit., p. 36). Hale's argument is not convincing; if *Hesu- could have yielded Hittite has's'u, Vedic asura- could also have yielded the Hittite has's'u and Assyrian as's'ura. Such a straight-forward Vedic-Avestan route may also explain the presence of Sanskrit lexemes in Kikkuli's horse training manual, Indic names among the names of Mitanni kings and Vedic deities named in the Mitanni treaty. A validation of this hypothesis can be made by tracing the so-called Dravidian lexemes in R.gveda and identifying concordant Avestan glosses.

The linguistic arguments favouring the hypothesis that Vedic language was an indigenous evolution in India come from a recent (1999) work by Prof. Witzel of Harvard University. Winternitz had noted earlier as follows: "The vedic language differs from Sanskrit almost not at all in its phonetic content but in its greater antiquity especially by a richer stock of grammatical forms. Thus for example, Ancient Indian has a subjunctive which is lacking in Sanskrit; it has a dozen different infinitive endings of which there is only one left behind in Sanskrit. The aorist forms, plentifully represented in the Vedic language disappear more and more in Sanskrit. The case-endings and personal endings are more perfecdt in the oldest language than in later Sanskrit." ((Maurice Winternitz, 1907, *Geschichte der Indischen Literatur*, tr. *A History of Indian Literature*, 1981, Delhi, Motilal Banarsidass, pp. 35-36). There is undoubtedly close relationship between the language of the Veda and the Indo-Iranian basic language as evidenced by the earlier texts related to the Avestan language which evolved into

the Ancient Persian of cuneiform inscriptions and the Ancient Bactrian of the Avesta. The work of Prof. Witzel is titled “Substrate Languages in Old Indo-Aryan” and appeared in the Electronic Journal of Vedic Studies, Vol. 5, 1999, Issue I (September). The following extracts are from the this work taken from the internet web pages:

6. Language of the Indus People: Vedic with Para-Munda substrate

> “The languages spoken in the northern part of the Indian subcontinent in prehistoric times have been discussed throughout most of this century. This concerns the periods of the Rigveda and of the Indus or Harappan Civilization (nowadays also called Indus-Sarasvati cfivilization in some quarters). Since the Twenties, the areas of the newly discovered Indus civilization has been regarded, beginning with J. Bloch, as having been populated by Dravidian speakers, while other early 20th century scholars such as S. Levy and J. Przyluski have stressed the Austro-Asiatic (Munda) substrate of Northern India,-- both are positions that have been maintained until today (e.g., Burrow, Emeneau, Parpola vs. Kuiper, Hock, Southworth). The relationship of these languages to the archaic (Vedic) form of Sanskrit has played a major role in such discussions. Both Dravidian and Munda have usually been understood as having preceded, as substrate languages, the introduction of Old Indo-Aryan (Vedic Sanskrit). Such suppositions will be investigated in this paper, and evidence will be produced indicating that the linguistic picture of this early period of South Asia was much more complex—as complex, instead as that of modern India…It may suffice to point out that the Rigveda (RV) is a bronze age (pre-iron age) text of the Greater Panjab…The RV is followed by a number of other Vedic texts, usually listed as sam.hita_s, bra_hman.as, a_ran.yakas and upanis.ads…While the area of the RV, as clearly visible in the mentioning of the major rivers, is the Greater Panjab (with the inclusion of many areas of Afghanistan from Sistan/Arachosia to Kabul/Gandhara), its temporal horizon consists of three stages…the early Rgvedic period…the middle (main) Rgvedic period…the late Rgvedic period…The RV contains some 300 words, that is roughly 4% of its hieratic vocabuly, that are not Indo-Aryan words (Kuiper 1991). It is possible to establish their non-IA character by studying their very structure. For, words belonging to a certain language follow well-established patterns…The structure of RV words such as ki_na_s’a, ki_kat.a, pramaganda, balbu_tha, br.bu, br.saya are simply not explainable in terms of IE or Iir (Indo-European or Indo-Iranian): the verbal/nominal roots ki_n, ki_k, mag, balb, br.s do not exist in IE as onlyh roots of the format are allowed and as b is very rare in IE; further only s. (but not s) is allowed in Vedic after i,u,r,k, and finally, the suffixes –a_s’a, -t.a, -anda, bu_tha do not exist in IE/Iir…To sum up, we can distinguish the following substrate languages. A Central Asian substrate in the oldest Rgvedic; RV I: no Dravidian substrate but that of a prefixing Para-Mundic (or Para-Austroasiatic) language, along with a few hints of Masica’s U.P.

Language ‘x’, and some others; RV II and III: first influx of Dravidian words; Post-RV (YV, AV Mantras –MS, KS, TS, VS, AV, PS—and later Vedic): continuing influx of the same types of vocabulary into the educated Vedic speech of the Brahmins; occurrence of Proto-Munda names in eastern Norther India…The very frequency itself of non-Dravidian loan words in the early (as well as in the later) RV is remarkable; it indicated a much stronger non-Dravidian substrate in the Panjab than usually admitted…Is the Indus language therefore a kind of Proto-Munda? Against this may speak first of all, as Kuiper states (1991), that the RV substrate does not have infixes like Munda. However, -n- infixes can be adduced in ka-bandha/ka-vandha, kar-kandhu, gandha_ri, pramaganda, s’akunti < ParaMunda *s.a-kontid, sr.binda and, e.g., in post-RV ku-surubinda, bainda, vibhindu, vibhinduki_ya…Some of the substrate words may, at least in part, have entered the RV through the intervention of the Indus language (la_n:galaq etc.)…For example, the name of pramaganda, the chieftain of the ki_kat.a (RV 3.53.14) who lived south of kuruks.etra (cfr. Witzel, 1995). Both words are non-Indo-Aryan and they show clear indications of Mundic character; maganda can be explained as ma-gand with the old, now unproductive Munda prefix ma- that indicated possession. The word gand may belong to Munda *gad/gaD, ga-n-d/gan.d. (Pinnow 1959: 351) that is also seen in gan.d.aki_, gan:ga_)…W. Nepali ga_d. (as suffix of rivfer names)…and apparently also in ma-gadha…The tribe of chief pra-maganda, the ki_kat.a, has either the typical ‘tribal’ suffix –t.a or the old Austro-Asiatic plural prefix ki- (or maybe both)…Further RV substrate names of persons, tribes and rivers include some exactly from the areas where Indus people are to be expected: in their late/post-Indus new settlement areas (J. Shaffer 1995: 139) in the eastern Panjab, in Haryana (kuruks.etra), and especially east of there, well into the Gangetic plains. Even during the middle/late Vedic period, the local rivers of Eastern Panjab are still designated by non-Indo-Aryan names: the famous bharata chieftain suda_s crosses (RV 3.33) the sutudri_ and vipa_s and settles on the sarasvati_. They are not explainable from IA: s’utudri_ (Sutlej) < *s.@-tu-da? From Munda *tu float, drift’, Kharia thu’da < *tu-da (da = water), Khasi (p@r=ti_u = outflow); note the later popular etymology z’atadru ‘running with a hundred streams’. Vipa_s’ < *vipas’/vibal (cf. also viba_li_ RV 4.30-.11-12), and note that the sarasvati_ still has a similar name, vaiz’ambhalya_ (with many variants, always a sign of foreign origin, in the bra_hman.a texts: TB 2.5.8.6, -bhalya_, pa_lya_, balya_ A_p. S’r.S 4.14.4, -bhalya_ bha_r.z’iks.a_; cf. also RV vizpala_?), which is to be derived from something like *vis.ambas’/*viz.amba_l., probably with the prefix s’am/k’am- (as in s’am- ara, kam-boja) from *(vi)-s.am-ba_s’, (note the popular etymology from vi-s’ambala ‘having widespread blankets’). It is likely that during the Indus period, the original name of the famous Rgvedic river sarasvati_ was something like *vi(s.am)bal./vi(s.am)bas’. If one insists, indeed, on renaming the Indus (sindhu, Burus.aski sende) culture, it should be renamed the Harappan or sende-vibas’…The land of

tu_rghna (TA), north of this region, has no Indo-Aryan etymology either…An important result is that the language of the Indus people, at least those in the Panjab, must have been Para-Munda or a western form of Austro-Asiatic…It may be asked, how far Austro-Asiatic speakers extended westwards during and before the RV period…Sumerologists, though without any firm reasons going beyond some vague mythological allusion to more eastern territories (Dilmun etc.), think that the Sumerians immigrated from the east, from the Indus area. If indeed so, the speakers of (Para-) Austrio-Asiatic would have been builders of a number of great civilizations, from Mesopotamia to Pakistan/India, Burma and Cambodia. If a relationship with Munda could not be confirmed by obvious etymologies, a minim al position would be to define the c. 300 non-Dravidian loan words as coming from an unknown, prefixing language of the Greater Panjab, which might be called, for lack of a self-designation, after its prominent geographical features, the gandha_ra-kha_n.d.ava or perhaps better, the kub ha_-vipa_s', or simply, using the archaeological term, the Harappan language…If the Indus language is a kind of Para-Munda it cannot, however, be excluded that one or more unknown languages are involved (cf. Zide and Zide 1973: 15) in the Rigvedic substrate. From the older RV onwards, we find a number of words that cannot be determined as Para-Munda…pippala RV 5.54.12… la_n:gala… vri_hi… mayu_ra…In short, the Panjab is an area of a Pre-Rgvedic, largely Para-Munda substrate that apparently overlays a still older local level which may be identical with Masica's 'language X' found in the Gangetic plains (preserved in some Hindi words). In general, the vocabulary of Para-Munda and 'language X' words is limited to local flora and fauna, agriculture and artisans, to terms of toilette, clothing and household; dancing and music are particularly prominent; and there are some items of religion and beliefs as well (Kuiper 1955, 1991). Since no traces of the supposedly Dravidian 'Trader's language' of the Indus civilization are visible in the RV, the people who spoke this language must either have disappeared without a trace (cf. b elow on Meluhha) or, more likely the language of the Panjab was Para-Munda already during the Indus period (2600-1900 BCE). Or, as expressed by Kuiper (1991: 53) in another context: 'Burrow and Emeneau understandably and rightly ignore the Pan-Indic aspects, but…their dictionary (DEDR), by omitting all references to Munda, sometimes inevitably creates a false perspective from a Pan-Indic pont of view'. The large number of agricultural words alone that have no Dravidian explanation indicates that the language of the Indus people cannot have been Dravidian (cf. also Southworth 1988: 663). Their successors, the Indo-Aryans, preferr3ed to tend their cattle and they spoke, like their brethren in spirit, the Ma_sai, about their sedentary non-Indo-Aryan neighbours in southern Kuruks.etra in this fashion: 'what is the use of cattle among the ki_kat.a?' (kim te kr.n.vanti ki_kat.es.u ga_vah—RV 3.53.14). As we can no longer reckon with Dravidian influence on the early RV, this means that the language of the pre-Rgvedic Indus civilization, at least in the Panjab, was of (Para-) Austro-Asiatic nature.

> This means that all proposals for a decipherment of the Indus script must start with the c. 300 (Para-) Austro-Asiatic loan words in the RV and by comparing other Munda and Austro-Asiatic words…"(Witzel, Michael, Substrate Languages in Old Indo-Aryan, in:*Electronic Journal of Vedic Studies*, Vol. 5, 1999, Issue I (September); http://www.1.shore.net/~india/ejvs).

This remarkable insight of Prof. Witzel needs to be studied further. There is no evidence, whatsoever, that the Para-Munda influenced directly the Avestan. The Avestan words cognate with the Rigvedic are explainable as derived from the Vedic language which included the Para-Munda substrates in the earliest Vedic period in the region which came to be called Bharatavars.a.

The pura_n.ic and epic age was an era of cultural fusion. "Intermarriages between the two tribes (devas and asuras) continues unchecked. Bhi_ma married Hidimba_, the son, born of their union, Ghat.otkaca fought on behalf of the Pa_n.d.avas in the Kuruks.etra battle. Aniruddha, the grandson of Va_sudeva married Us.a_, the daughter of Ba_n.a_sura. Pururava_'s son A_yu married the daughter of Svarbha_nu, an asura. Not only the inter-tribal marriages was acceptable, even the earlier Brahmanical law-givers went to the extent of including the custom of Asura form of marriage into their law-books and called Asura marriage. In such marriage, the bride was bought from her father by paying bride price (A_s'vala_yana Gr. S. 1.6; Baudha_yana Dharma S. 1.35; Gautama Dharma S. 4.12; Manusmr.ti 3.31). The Vasis.t.ha Dharma Su_tra (1.35) recognizes such marriage belonging to Manus.a form. Though other sacred texts look on it with disfavour, the Arthas'a_stra (3.2.10) allows it without criticism: pitr.prama_n.a_s' catva_rah pu_rve dharmya_h ma_tr.pitr.prama_n.a_h s'es.a_h. As for instance the marriage of Das'aratha of Ra_ma_yan.a and Pa_n.d.u of Maha_bha_ratta may be taken. Das'aratha of Ayodhya_ married Kaikeyi_and their son was illustrious Bharata. The sister of S'alya namely Ma_dri_ was united with Pa_n.d.u on payment of heavy bride price (MBh. 1.105.4-5)…Pura_n.as…Yaya_ti married S'armis.t.ha_, the daughter of the Asura king Vr.s.aparva_ and had three sons namely Druhyu, Anu and Puru. Because of his affiliation with the mother's side, Puru was called an Asura…matriarchal nature of Asura society…the celebrated Brahminical myth of the churning of the oceasn is a popular ojne, where the Asuras seize the ambrosia, churned out of the ocean before the gods took possession of it…". (Upendranath Dhal, *Mahis.a_sura in Art and Thought*, 1991, Delhi, Eastern Book Linkers, p.27).

As'ur (Akkadian) has, by the nineteenth century BC, been recognized as the national god of Assyria. In political terms, he bestowed the scepter and the crown and blessed the Assyrians. (Tikva Frymerkensky, Ashur, *Encyclopaedia of Religion*, Vol. I, Ed. M. Eliade, pp. 461 ff.) The enmity of Asuras with the gods is noted. (Brown, W.Norman, Proselytizing the Asuras: A noteor R.gveda 10.12, *Journal of the American Oriental Society*, 39, Part 2, 1919, pp. 100-103). Historicity of the Asuras is evaluated and Asuras are described as immigrants from Assyria and were the builders of the Harappan culture. As'ur the deity was

symbolized by a winged diSkanda The As'ur people were renowned for magic, medicine, sculpture, architecture and military prowess. (A.Banerji Sastri, The Asuras in Indo-Iranian Literature, *JBROS*, XI.1, March 1926, pp. 110-139; Asura expansion in India, *JBROS*, XII.2, June 1926, pp. 243-285; II Asura expansion by sea*, JBROS*, XII.3, Sept. 1926, pp. 334-360; V Asura Institutions, *JBROS*, XII.4, December 1926, pp. 503-539). The settlements of Assur or Asura in Magadha or South Bihar are noted. (D.R. Bhandarkar, Aryan Immigrants into Eastern India, *ABORI*, XII.2, 1931, pp. 103-116). A comprehensive survey of the texts from the R.gveda and Bra_hman.as is used to analyse the meaning of the term 'asura' as lord, leader and as corroborated by Iranian mythology. It is noted that the terms asura and deva are both used to qualify the same Vedic deity—for example, Indra, Varun.a, Mitra, Agni, while the Iranian works recognize 'asura' as divine and 'daeva' as demoniac. (Wash E. Hale, *Asura in Early Vedic Religion*, Ph.D. Dissertation, Harvard University, 1980; Delhi, Motilal Banarsidass, 1986). An anthropological perspective identifies the asura as a scheduled tribe of Netarhat plateau of Chotanagpur, Bihar and surveys their customs, rites, economic and social conditions. (K.K.Leuva, The Asur*—A Study of Primitive Iron Smelters*, New Delhi, Bharatiya Adimjati Sevak Sangh, 1963). Asuric culture through the ages is attempted, as a fusion of cultures. (K.P. Chattopadhyaya, *The Ancient Indian Culture Contacts and Migrations*, 1970, Calcutta, Firma KL Mukhopadhyaya). The dominance, in ancient times, of Asuras in extensive areas of Africa and Eurasia is emphasized. (K.L. Jain Vasasiya, *Indian Asuras Colonised Europe*, 1990, Delhi, Itihas Vidya Prakashan). The myths related to the Asura Bali-Va_mana, as a benevolent king and as a devotee of S'iva, is presented. (G.C. Tripathi, Der Ursprung und die Entwicklung der Vaman-Legende in der indischen Literatur, 1968, Wiesbaden, Otto Harrassowitsz). The mythology of Bali is also presented. (Clifford Hospital, *The Righteous Demon—A Study of Bali, 1984*, Vancouver, University of British Columbia). Mahis.a as a leader of Asuras in the context of the mythology of Mahis.a_suramardini is presented. In an evaluation of the genesis of the concept of Asura, it is noted the Ashur Marduk, the supreme deity of Babylonian pantheon was adopted as Ahur Mazda by the Persians after occupying Assyria.. (Upendranath Dhal, *Mahis.a_sura in Art and Thought*, 1991, Delhi, Eastern Book Linkers).

The following Dravidian lexemes are concordant with the semantics of a_rih, [cf. O.Ir. aire = nobleman]. To cite Mayrhofer: "To trace back the name of Aryans in Indo-Germanic time is not plausible, as the word evidently represents only an inner-aryan evolution which is based in a_rih. O.Ir. aire, nobleman is to be kept away according to Thumeysen." (M.Mayrhofer, *Kurzgefasstes etymologisches worterbuch des altindischen,* Heidelberg. 1953-77, Vol. I, p. 52). ar_an_ = sacrificer; ar_aviya virtuous; ar_aviya_n- = virtuous man; ar-avan- one who is virtuous, god, Buddha; ascetic; ar-am = moral or religious duty, virtue, dharma, Yama (Ta.); ar-a, ar-u virtue, charity, alms, law, dharma, Yama (Ka.); ar-am = law, dharma (Ma.)(DEDR 311). Grassman translates a_rya as: 1. good, kind, gracious, friendly which is said of gods, godly beings, of the singer presenting the offerings; 2. true, produce (yield etc.), stranger (from the meaning opposed to godly); 3. stranger (of the songs). (H. Grassmann, Worterbuch zum Rig-veda,

Wiesbaden: O. Harrassowitz, 1955, col. 115). Naighan.t.u explains arya as master, lord (Pa_n. iii.i.103). Grassman (ibid., p. 183), connects the root a_r to praise, extol, commend (Geldner: erkennen; cf. RV. VIII.16.6; RV 10.48.3). The Dravidian lexemes cognate with the semantics of a_r: a_r to shout (Ta.); a.r- (a.t-) to call (Ko.); a_r, a_rcu to cry aloud (Ka.); ara- to moo, make loud hoarse noise (Kod.); a_rbat.a a joyful cry, triumph (Tu.); a_rcu to cry aloud, shout (Te.); a_r to sound (as bell etc.)(Pa.); a_rpa to shout (Kond.a); to call (Kui); a_rh'nai to invite (Kuwi)(DEDR 367).

In RV 1.123.1, arya_ is explained by Sa_yan.a as noble; Geldner interprets the term as kind, favourable.
p&/wU rwae/ di]?[aya Ayae/Jy! @en<? de/vasae? A/m&ta?sae ASwu> ,
k«/:[adœ %dœ A?Swadœ A/yaR ivha?ya/z! icik?TsNtI/ manu?;ay/]ya?y .
1.123.01 The spacious chariot of the graceful (dawn) has been harnessed; the immortal gods have ascended it; the noble and all-pervading Us.a_ has risen up from the darkness, bringing health to human habitations. [daks.in.a_ya_h = of the clever one; she who is skilled in her own function, svavya_pa_ra-kus'ala; bringing health: cikitsanti, healing, remedying the malady of darkness].

Mayrhofer rejects Wust's suggestion aht the term a_rih is comparable with Lat. Ara_re, ploughman. (M.Mayrhofer, *Kurzgefasstes etymologisches worterbuch des altindischen*, Heidelberg. 1953-77, Vol. I, p. 79). The Dravidian lexemes which are consistent with the seamntics of 'plough' are: araka a plough with bullocks etc. complete (Ta.); are a plough (Ma.)(DEDR 198). A possible link with the semantics of a herdsman are seen in lexemes: a.r.yeka.m head cattle-boy (Ko.); a_reku~_d.u a watchman (Te.); a_raike, a_re_kti care of, oprotection (Tu.); a_rayu, arayu to think, search (Te.); a_ra_y to seek (Ta.)(DEDR 377). Mayrhofer, however, while noting the Iranian parallel Av. airya_, OP ariya, a_rya, derives the terms arya (good, true, strange) and a_rya (also, a_ria) from aryah = lord, hospitable lord; master of the house. The terms arya and a_rya occur 68 times in the R.gveda. (H. Grassmann, *Worterbuch zum Rig-veda*, Wiesbaden: O. Harrassowitz, 1955, cols. 115-116 and 185-86).

iv/Tv]?[>/ sm&?taE c³mas/jae =?suNvtae/ iv;u?[> suNv/tae v&/x> ,
#NÔae/ ivñ?Sy dim/ta iv/-I;?[ae ywav/z< n?yit/ das/m! AayR>? .
5.034.06 Thinning (his enemies) in battle, and accelerating the wheels (of his car), he turns away from him who offers no libation, and augments (the prosperity of) the offerer; Indra, the subduer of all, the formidable, the lord, conducts the Da_sa at his pleasure.
Powerful in fight, stopping the wheel, the opponent of non-pressing one, the strengthener of the pressing one, compeller of everyone, frightening, Indra, the a_rya leads the da_s as he wills. (Geldner)

Aa p/Kwasae? -la/nsae? -n/Ntail?nasae iv;a/i[n>? iz/vas>? ,
Aa yae =?nyt! sx/ma AayR?Sy g/Vya t&Tsu?_yae Ajgn! yu/xa n¨n! .
7.018.07 Those who dress the oblation, those who pronounce auspicious words, those who abstain from penance, those who bear horns (in their hands), those

who bestow happiness (on the world by sacrifice), glorify that Indra, who recovered the cattle of the Arya from the plunderers, who slew the enemies in battle. [Those who dress: Denominations of the persons assisting at religious rites are: 1. paktha_sah, havis.am pa_cakah, cooks of the butter offered in oblation; 2. bhala_nasah, bhadra va_cinah, speakers of that which is lucky; 3. alina_sah, tapobhir apravr.ddhah, not eminent by austerities; 4. vis.a_n.inah, having black horns in their hands for the purpose of scratching kan.d.uyana_rtham, the same as di_ks.itah, having undergone the preliminary purification called di_ks.a; 5. s'iva_sah, ya_ga_dina_ sarvasya lokasya s'ivakarah, the makers happy of all people by sacrifice and the like].
These people, i.e. Pakthas, Bhala_nasas, Alinas and Vis.a_nins named themselves as his good friends. The feast companion of the A_rya (a_ryah) who led his men in the battle has come to help out of longing fot the cows of Tr.tsu. [Here Indra is the a_rya]. (Geldner).

In Avestan, Yas't, the compound term used is: airya dainha_vo_ (Yas't VIII.9.56) This phrase is translated as the Aryan nations. [J. Darmesteter, The Zend Avesta, Part I, Oxford, *Sacred Books of the East* IV, 1880; In Yas't V.69, there is a legend related to Jama_spa who sees the enemy's army advancing to battle. He pleads with Ana_hita to guide him to victory as also all the other Arians (airya)]. Another phrase used is airyo s'ayana (Yas't X.13) (explained as 'Arian lands or homestead'). In Yas't XIII.87, Ahura Mazda creates 'the race of all Arian regions, the seed of all Aryan lands'.
s ih ³tu>/ s myR>/ s sa/xurœ im/Çae n -U/dœ AÑ,?tSy r/wI> ,
tm! mexe?;u àw/m< de?v/yNtI/rœ ivz/ %p? äuvte d/Smm! AarI>? .
1.077.03 For he is the performer of rites, he is the destroyer and reviver (of all things), and, like a friend he is the donor of unattained wealth; all men reverencing the gods, and approaching the well-looking Agni, repeat his name first in holy rites. [marya and sa_dhu = destroyer and reviver; or, killer or extirpator of all and the producer]. [vis'a a_ri_h = clans)

He is the insight, he is the young man, he is an excellent creature, he is the wonderful leader (insight?). Him the master, the divinely devoted Arya clans, call first the devoted Arya clans in the sacrifice. (Geldner).

tm! $?¦t àw/m< y?}/sax</ ivz/ AarI/rœ Aa÷?tm! \Ãsa/nm! ,
^/jR> pu/Çm! -?r/t< s&/àda?nu< de/va A/i¶< xa?ryn! Ôiv[ae/dam!.
1.096.03 Approaching him,let all men adore Agni, the chief (of the gods), the accomplisher of sacrifices, who is gratified by oblations and propitiated by praises--the offspring of food, the sustainer of (all men), the giver of continual gifts; the gods retain Agni as the giver of (sacrificial) wealth. [prathama = lit. the first; here, mukhya, chief (of the gods)]. [The term used is: vis'a a_ri_h = of the Aryas, Aryas].

The A_ryan clans (vis'a a_ri_h) called him as the first, sacrificial director, poured in (with butter), the prominent one, the sun of power, the Bharata which has got wide gifts. (Geldner).

y \]a/dœ A&lth?sae mu/cdœ yae vayaR?t! s/Ý isNxu?;u ,
vx?rœ da/sSy? tuivn&M[nInm> .
8.024.27 (He it is) who rescues men from the wickedness of evil beings, who enriches (the dwellers) on the seven rivers; now hurl, you who abound in wealth, your weapon at the Da_sa. [Dwelleres on the seven rivers: sapta sindhus.u, i.e. the dwellers on the banks of the seven rivers; or, on the shores of the seven seas].

You who protected us out of the danger from the bear, or you who turned away the weapons from the a_ryas in the seven streamed land of the da_sas, you courageous one. (Geldner).

This hymn attests that the da_sa as well as Indra inhabited the region of the seven rivers (Sapta Sindhu or Avestan: Hapta Hindu). This is the airya dainha_vo_ (Yas't VIII.9.56) (the Aryan nations). Avestan dakhyuma, da_khyuuma was the name of a deity of a land. Cognate lexemes are: dasma, dasra denoting accomplishment of wonderful deeds. (Ch.Bartholomae, *Altiranisches Worterbuch*, Berlin, 1925 (?), Col. 706-711; derived from dan:h; cf. Kanga, *An Avesta-English-Gujarati Dictionary*, Bombay).

y \]a/dœ A&lth?sae mu/cdœ yae vayaR?t! s/Ý isNxu?;u ,
vx?rœ da/sSy? tuivn&M[nInm> .
8.024.27 (He it is) who rescues men from the wickedness of evil beings, who enriches (the dwellers) on the seven rivers; now hurl, you who abound in wealth, your weapon at the Da_sa. [Dwelleres on the seven rivers: sapta sindhus.u, i.e. the dwellers on the banks of the seven rivers; or, on the shores of the seven seas].

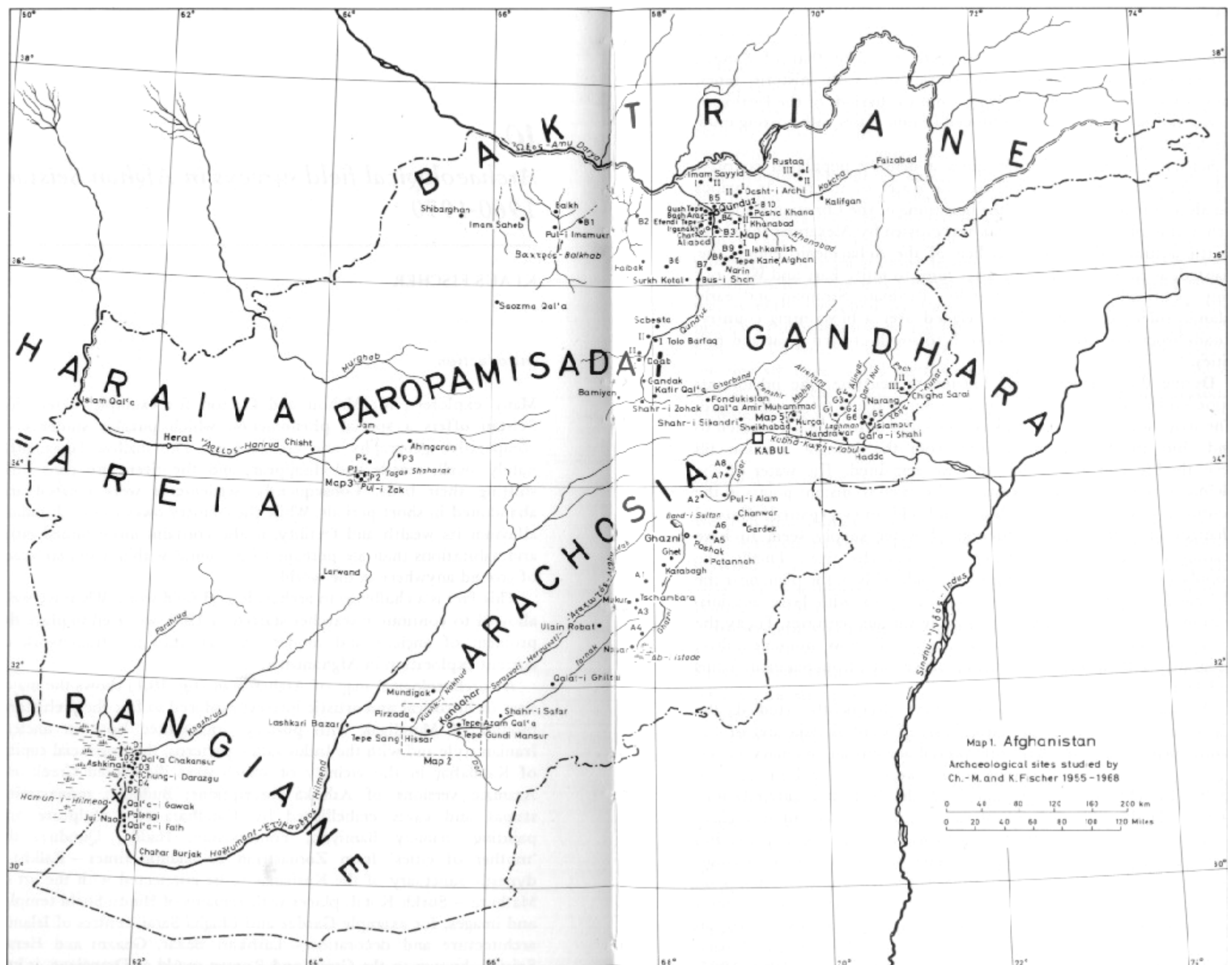
The term dasyu is used in RV. 6.18.3, 7.5.6, 2.11.18, 1.51.8 with the possible connotation of 'people in general or inhabitants who are associated together in a place'. Some of the epithets associated with dasyu are: abrahman (RV 4.16.9, without prayer), avrata (RV 1.51.8; 175.3; 6.14.3; 9.41.2, without vows), anyavrata (RV. 8.70.11, with different vows), apavrata (RV 5.42.9, with bad vows), ayajvan (RV 8.70.11, not sacrificing); ayajyu (RV 7.6.3, not sacrificing).

Tve A?su/yi vs?vae/ Ny! \{v/n! ³tu</ ih te? imÇmhae ju/;Nt? ,
Tv< dSyU/Aaek?sae A¶ Aaj %/é Jyaeit?rœ j/ny/Ú! AayaR?y .
7.005.06 Reverencer of friends, Agni, th Vasus have concentrated vigour in you; they have been propitiated by your acts; generating vast splendour for the Arya, do you, Agni, expel the Dasyus from the dwelling.
Tv< h/ nu Tydœ A?dmayae/ dSyU/@k>? k«/òIrœ A?vnae/rœ AayaR?y ,
AiSt? iSv/n! nu vI/yi tt! t? #NÔ/ n iSv?dœ AiSt/ tdœ \?tu/wa iv vae?c> .
6.018.03 You are he who has quickly humbled the Dasyus; you are the chief one who has given posterity to the Arya;but, Indra, is not verily your power such? If it be not, then in due season confess. [Not beholding Indra, the r.s.i began to question his attributes and power; next verse explains his belief in these attributes and power].
ix/:va zv>? zUr/ yen? v&/Çm! A/vai-?n/dœ danu?m! AaE[Rva/-m! ,

Apa?v&[ae/rœ Jyaeit/rœ AayaR?y/ in s?Vy/t> sa?id/ dSyu?rœ #NÔ .
2.011.18 Indra, hero, keep up the strength wherewith you have crushed Vr.tra, the spider-like son of Da_nu, and let open the light to the A_rya; the Dasyu has been set aside on your left hand. [The spider-like son of Da_nu: da_num aurn.ava_bham: aurn.ava_bham = aurn.ana_bham; aurn.a = a spider; a_bha = resembling].
iv ja?nI/ý! AayaR/n! ye c/ dSy?vae b/ihR:m?te rNxya/ zas?dœ Aì/tan! ,
zakI? -v/ yj?manSy caeid/ta ivñet! ta te? sx/made?;u cakn .
1.051.08 Discriminate between the A_ryas and they who are Dasyus; restraining those who perform no religious rites, compel them to submit to the performer of sacrifices; be you, who are powerful, the encourager of the sacrificer; I am desirous of celebrating all your deeds in ceremonies that give you satisfaction. [A_ryas are those who practise religious rites;Dasyus do not observe religious ceremonies and inimical to those who do].

Microlithic sites in India and neighbouring regions and the areas of the substrate languages of Naha_li, Irul.a, Vedda and Rodiya (After Schwartzberg, Joseph, ed.,1978, A historical atlas of South Asia, Chicago; loc. cit., Parpola, 1994, Fig. 8.9) It is likely that many lexemes of the Pra_kr.ts were derived from the hundreds of such languages which should have constituted the substratum of the Linguistic Area in Indic protohistory.

7. From Sarasvati to Haraquaiti



Haraquaiti near Kandahar and Mundigak, joining the Haetumant (Hilmand) river; archaeological sites in Arachosia, Drangiane, Gandhara, Areia, Baktriane (After Fischer, K., 1970, Projecfts of archaeological maps from Afghan-Seistan between 31 20' to 30 50'N and 62 00' to 62 10'E., in Zentralasiatische Studien, No. 4, Wiesbaden; loc. cit., Fischer, Klaus, 1973, Archaeological Field surveys in Afghan Seistan 1960-1970, in: Norman Hammond, ed., *South Asian Archaeology*, Duckworth, London, Fig. 10.1). "Many explorers, MacMahon and Curzon for example, agree that Seistan offers a special phenomenon which puzzles students of comparative geography and archaeology. The shallow lakes alternately swell, recede and disappear and the rivers are constantly shifting their beds. Consequently settlements were created and abandoned in short periods. While the country owes to the abundant alluvium its wealth and fertility, it also contains more ruined cities and habitations than are perhaps to be found within a similar space of ground anywhere in the world...An archaeological map of Afghanistan shows the major sites of historical and artistic interest explored so far: the prehistoric mound of Mundigak with pottery ornamented both in ancient Iranian style and with the Indus valley patterns, the provincial capital of Kandahar in the vicinity of which were discovered Greek and Aramaic versions of

Ashoka inscriptions; Buddhist monasteries, stupas and caves embellished by Gandhara-style sculpture and painting, namely Bamiyan, Fondukistan, Hadda, Qunduz; the 'mother of cities' from Zoroastrian to Islamic times—Balkh; a dynastic sanctuary of the Kushans to be connected with the art of MathuraSurkh Kotal; places with remains of Hindu-Shahi temples and images, for example Gardez and Chigha Sarai; centers of Islamic architecture and decoration—Lashkari Bazar, Ghazni and Heart. Seistan, known to the Greek and Roman world as Drangiane, is just being explored. The vast desert is covered by mud-brick remains. Moving sand dunes encircle old fortresses, like that of Sangar. Recently we have located prehistoric and early historic tepes, mounds and wall systems deriving from the periods of the Parthians, Sakas and Sasanians, and abandoned Islamic cities with soaring mud-brick walls and towers...Seistan was in prehistoric times a densely populated country...Seistan was crossed by Alexander the Great in the autumn of 330 BC...During the thirteenth and fourteenth centuries the inhabitants opposed the Mongol invasion, were conquered and totally destroyed. The irrigation works were wasted, the cities burnt and life seemed to end...The water of the Helmand was again used in canals and carried to distant points in the country; new canals were built and old ones repaired. Natural changes in climate and reduction of water supply seem to have restrained people from settling far from the river. Finally the population was forced to keep cattle and fields in the plain near the Helmand." (Fischer, Klaus, opcit., pp. 133-134).

It would appear that change of the Old Indic names into Iranian forms when they moved into the area may explain the following concordances: Sarasvati_ as Haraxvaiti, Sarayu as Haroiiu and Gomati as the Gomal.

In this context of faunal remains found in mesolithic sites in Rajasthan, it will be apposite to review a claim made by Alfred Hillebrandt that the early references to Sarasvati_ in the R.gveda should be traced to Sarasvati_ of Arachosia, which according to Hillebrandt is the 'western Sarasvati_' as distinct from the 'eastern' Sarasvati_ in located in Kuruks.etra. "The worshippers of Pu_s.an lived in the vicinity of the Sarasvati_...Book VI takes us to the banks of the western Sarasvati_ and book VII, on the other hand, to the area of Kuruks.etra, to the holy Sarasvati_ of the middle country. There at the Arghandab (Greek: Etymander) in Arachosia, Vadhryas'va's son Divoda_sa fought against the Pan.is, Pa_ra_vatas and Br.saya, and the river of the country "who consumed the Pan.is" (RV 61.1) stood by his side as a guardian deity. In the same book which thinks of the Pan.is with special hatred we see Pu_s.an "who pierces the Pan.is" at the center of the cult, and he is mentioned once in the Sarasvati_ hymn also (RV 6.61.6). Pu_s.an and Sarasvati_ occur side by side elsewhere too. 6.49.7 Sarasvati_; 8 Pu_s.an; 10.17.3-6 Pu_s.an; 7-9 Sarasvati_; 65.1 (Va_yuh) Pu_s.a_ Sarasvati_. Their association has been continued especially in liturgical texts. (cf. TS 1.2.2; 6.1.2.2: sarasvatyai pu_s.n.e 'gnaye sva_ha_; 5.5.12:...dha_tuh; sarasvatyai s'a_rih s'yeta_ purus.ava_k, sarasvate s'ukah s'yetah purus.ava_g, a_ran.yo 'jo nakula_ s'aka_ te paus.n.a_ va_ce...; MS 1.10.5 (145.16): sarasvaty eva sr.s.t.a_su va_cam adadha_t pu_s.an.am pratis.t.ha_m abhy asr.jyanta;

va_vai sarasvati_, pas'avah pu_s.a_; Abr. 2.24.5: indrah pu_s.an.va_n, indrah sarasvati_va_n)...Goat and sheep-rearing flourished in the mountains of Afghanistan. Pu_s.an's chariot is drawn by goats and he weaves the woolen garment for the sheep. As the goat is sacred to Pu_s.an so is the ewe, mes.i_, sacred to Sarasvati_ at least in the ritual. (TS 2.1.2.6; S'Br 13.2.2.4; a ram in the Sautra_man.i_; TBr. 2.6.15.1). The R.gvedic period is familiar with the sheep-rearing in Gandha_ra, at the Sindhu and perhaps also at the Parus.n.i_. (Pischel and Geldner, *Vedische Studien*, II, p. 210). RV 1.126.7, the only passage which is more significant speaks of sheep-rearing, mentions a woman "who is hairy like the ewe among the Gandha_ris" (Zimmer, H., *Altindisches Leben*, pp. 30 ff., 229)...But the Sarasvati_ of Arachosia alone does not hold good for the entire RV. It is likely that the memory of this home of the Vedic clans is preserved in some single passages of the Bra_hman.a literature as well. But already the seventh book takes us to other surroundings, to the banks of the holy river in the inner India. (RV 7.96.2: 'When the Pu_rus seize both the andhas (on your banks) by force, then, you radiant one, be merciful to us as the friend of the Maruts and direct the favour of the mighty ones towards us'.(Geiger, *Ostiranische Kultur im Altertum*, p. 364 ff.)
AV 6.30.1:

> **deva_ imam madhuna_ samyuitam yavam sarasvatya_m adhi man.a_v acarkr.s.uh**
> **indra a_si_t si_rapatih s'atakratuh kina_s'a_ a_san marutah suda_navah**

The gods sowed at the Sarasvati_ barley mixed with honey over an amulet. Indra S'atakratu was the lord of the plough, the abundantly bestowing Maruts were the drivers. [Hillebrandt notes: "Here the stream is closely associated with the Maruts, and this is exactly the case in the R.gvedic verse (RV 7.96.2)...Pu_rus must have extended their territories upto the Yamuna_ and Parus.n.i_...The events described in books III and VII which take place mostly farther in the east on the Parus.n.i_, Yamuna_, Vipa_s and S'utudri_ make it improbable that the Sarasvati_ mentioned in RV 7.95, 96, on the banks of which the Pu_rus dwelt, can still be identical with the Arachotos.").

The reference to goats and sheep should not automatically link Sarasvati_ with Arachosia, Afghanistan, since faunal remains of goats and sheep have been found in the region close to Parus.n.i_, in North-West India, Rajasthan. It may not be necessary to postulate two Sarasvati_'s to explain the contextual references in Book VI and Book VII. The rationale for identifying Haraqaiti (arachotos) as the earlier, western Sarasvati_ is based on very flimsy grounds of rearing of sheep in Afghanistan. It would appear that sheep were reared in North West India, Rajasthan as well. Close to Parus.n.i_, in the Markanda valley, a lot of faunal material, dated as early as to the Pleistocene period, has been recovered from the Upper Siwaliks in general and the neighbouring areas in particular Mention has been made of frequent occurrence, about 2.48 million years ago, of *stegodon insignis ganesa, archidiskodon planifrons, elephas hysudricus, equus sivalensis,*

rhinoceros sivalensis, R. palaeoindicus, Sus spp., camelus sivalensis, cervus spp., colossochelys atlas, geoclemys sivalensis, crocodylus spp. and a host of other new forms (Badam, G.L., *Pleistoceene Fauna of India*, Pune, Deccan College; S.N.Rajaguru and G.L. Badam, Late Quaternary Geomorphology of the Markanda Valley, Himachal Pradesh, in: B.P. Radhakrishna and S.S. Merh, eds., *Vedic Sarasvati*, 1999, Bangalore, Geological Society of India, p. 149). An alternative view is that the word Harakhaiti or harahvaiti itself traveled from India to Afghanistan, with the linguistic change of 's'a, sa and s.a' to 'ha', "as we proceed from the traditional region of Madhya des'a towards the west. To take only a couple of instances even now Sa_dhu is pronounced as Hau, S'ivaji as Hibji, Sukhdeva as Hukhdeva, Das'a as Daha and Sa_huka_ra to Hauka_ra in dialects of Marwar…The same process operated in the evolution of S'aryqan.a_ in the R.gveda later to Harya_n.a_…The consistent operation of this linguistic process of the replacement of sibilants by "Ha" thus justifies the conclusion that the name Sarasvati_ also logically underwent the same process in its westward journey and became Harahvaiti or Harkhaiti in Arachosia." (O.P. Bharadwaj, *Studies in Historical Geography of Ancient India*, Delhi, 1986, pp. 176-191; cf. *Vedic Index*, II, 364). The place name spelt as Taus.a_yan.a by Pa_n.ini changed to Tohana at some later stage. (V.S.Agrawal, 1974, *India as known to Pa_n.ini,* 2nd edn., Varanasi, p. 74). So, too the changes from asura to ahura (Isaac Taylor, 1980, *The Origin of the Aryans,* Reprint, Delhil, pp. 184-186). and Sindhu to old Persian Hindu (V.S. Agrawal, V.S. 2011, *Bharata ki maulika ekata_* (Hindi), Allahabad, p. 30f; Tola Frernando and Dragonetti Carmen, 1986, India and Greece before Alexander, *ABORI*, vol. LXVII (pts. I-iv), pp. 159-194)..

"The linguistic evidence in the Vedic texts themselves points, of course,m to a close relationship with the Iranian speaking tribes. However, it is not entirely clear where the combined Indo-Iranians lived together before they left for Iran and India, when they went on their separate ways, by which routes, and in what order. Furthermore, as G. Morgenstienrne (1975) has shown, the Kafirs or Nu_rista_ni_s constitute a third branch of the Indo-Iranians who were early on isolated in the impenetrable valleys of the Kunar and its tributaries." (Witzel, M., 1995, Early Indian history: Linguistic and textual parameters, in: G. Erdosy, ed., *The Indo-Aryans of Ancient South Asia*, Delhi, Munshiram Manoharlal, p. 92).

The strongest evidence for the migration is the name of the Croatians who are a people mentioned in the Behistun inscription as Hravaits, a clear derivative from Sarasvati River Bank~Haraquaiti region, which link is logical in the context of the evidence of the earth sciences of the course of the 1600 kms. long Himalayan river called Sarasvati_. In the continuing search of the Indo-Europeans, the people of the Sarasvati_ River valley dated ca. 3500 BC are likely to be the oldest representatives who evolved and sustained a continuity of culture into the historical periods and into the present day civilization of India.

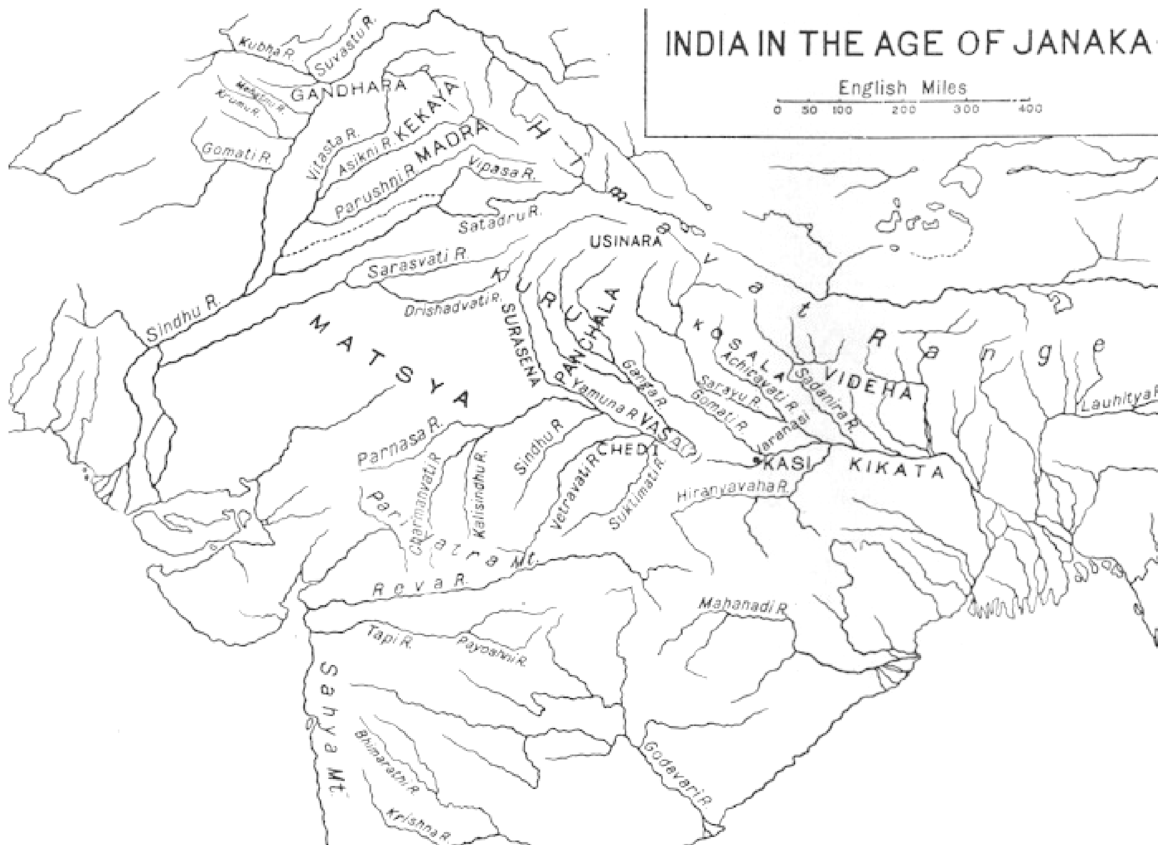
Both the terms, atharvan and navagva are used as synonyms in R.gveda. "…they (Atharvans and Navagvas) are credited with having entered a mountain pass (RV 1.112.18; RV 5.29.12), breaking mountain ranges (RV 1.62.4; 1.71.2; 4.2.15;

4.3.11), obtaining riches (RV 7.52.3), breaking mineral rich mountains (RV 4.2.15), winning cows (RV 1.62.2), and possessing miraculous powers (RV 3.53.7). These seers called Navagvas and Das'agvas are seven in number (sapta vipra_: RV 4.2.15) and reminding us of the number of stars in the constellation by their names. They are remembered as manes or pu_rve pitarah (RV 3.55.2: fathers of the old times who know the region; RV 9.97.39: our sires of the old who knew the footsteps, found light and stole the cattle), and are said to be conversant with the stations, padajn~a_ (RV 9.97.39). They are not only recalled in the course of overland journeys, but also during sea voyages (RV 8.12.2) spreading over ten months (RV 5.45.11)." (Bhagwan Singh, 1995, *The Vedic Harappans*, New Delhi, Aditya Prakasan, p. 198).

"There is no river of Afghanistan mentioned in the R.gveda which does not flow into the Indus. However, in a wider perspective, we find Afghanistan, South Central Asia, West Turkistan, Kazakistgan, (Azerbaydzhan) Iran (Mandas in western Persis, 2500 BC and Zarathustrians in central Iran), Turkey (Hittites in the second millennium BC), Syria, Palestine (Mitannis, 1400 BC), and Babylonia (Kassites, 1760 BC) related linguistically and commercially, directly and immediately to the Vedic Indians as well as the Harappans...No serious attempt appears to have been made for proper assessment of the relative position of Harappan traders in the contemporary world which, in view of the spread of Indo-Aryan languages and vestiges of their colonies in and around the great civilizations of West Asia, must have been hegemonic. Although linguistic testimony is meager, the impact on both Babylonian and Assyrian mythology and rituals as noted by competent authorities on the subject (Carnoy, Albert Jr., 1917, *Mythology of All Races, IV, Iranian Mythology*, Boston)...Afthanistan has been so thoroughly Aryanised that till the Greek times it was called A_rya_na_...Why is there no archaological evidence of the presence of Aryans in India? And the answer comes with a resounding echo: Because Harappan archaeology is hardly different from the Vedic one. We find almost the same geographical area occupied by the 'Aryans' as is covered by the material remains of the Harappans. Almost the same area is covered by the Indo-Aryans and Indo-Iranians abroad as was being explored and exploited by the Harappans for mineral wealth." (Bhagwan Singh, 1995, *The Vedic Harappans,* New Delhi, Aditya Prakashan, pp.47-49).

The identification of the Vedic Sarasvati River with the Indus or its tributaries on the right bank such as Argandab or Helmand is erroneous because in the Vedic texts, the upper course of Sarasvati is detailed as located between S'utudri_ in the West, a tributary of Beas (as also attested in a R.gvedic su_kta.) and Yamuna in the East, once upon a time; the Sarasvati river is also associated with the Maruts and is located close to a desert. The R.gvedic descriptions fit the Sarasvati_ river courses from where have been unearthed over 1200 archaeological sites (of the fourth and third millennium BC) of the bronze age of the Indian Civilization, including Rakhigarhi (150 miles north of Delhi, on the banks of the Sarasvati River; apart from the clusters of hundreds of sites in Bahawalpur province (north

of Sind province), again on the banks of the Sarasvati River) which is about 220 ha., and hence, 3 times the size of Mohenjodaro in extent.



The kingdom of Videha, across the Gandak river, (Map after Raychaudhuri, opcit., p. 54). Videha had nine states of importance as noted in the Bra_hman.as and Upanis.ads: gandha_ra, kekaya, madra, us'I_nara, matsya, kuru, pan~ca_la, ka_s'i and kosala. Videha (of King Janaka) is mentioned in Yajur Veda. (Vedic Index, II.298). This corresponds to the modern Tirhut in North Bihar ('Videha comprised the country from Gorakhpur on the Ra_pti to Darabhanga, with Kosala on the west and An:ga on the east. On the north it approached the hills, and to the south it was bounded by the small kingdom of Vais'a_li'—Pargiter, 1897, *JASB*, 89). S'atapatha Bra_hman.a seems to state that Videgha Mathava who came from the banks of the Sarasvati_ founded the Videhan kingdom. (Vedic Index, I.436): the fire god went burning along this earth from the Sarasvati_ towards the east, followed by Ma_thava and his priest, Gotama Ra_hu_gan.a till he came to the river Sada_ni_ra_ (Ra_pti river) which flows from the norther (Hima_laya) mountain, and which he did not burn over. Thinking 'it has not been burnt over by Agni Vais'va_nara (the fire that burns for all men)', Brah_man.as did not go across the stream in ancient times. Only Ma_thava's arrival led to the movement of people into this area.

Kosala [including the cities of Ayodhya_, Sa_keta and Sa_vatthi_ (S'ra_vasti_)] was bounded by the Gomti on the west, Sarpika_ (or Syandika_ or Sai) river on

the south and Sada_ni_ra_ on the east and the Himalayas on the north. Buddha notes in Sutta Nipa_ta (SBE, X, Part II, 68-69): “Just beside Himavanta there lives a people endowed with the power of wealth, the inhabitants of Kosala (kosalaem niketino or having an abode in Kosala). They are A_dichchas by family (A_ditya or solar group), S’a_kiyas by birth; from that family I have wandered about, not longing for sensual pleasures.”

Ancient Daks.ina_patha in the age of the Later Videhas (After Raychaudhuri, opcit., p. 76). Rigveda refers to daks.in.a_pada_ (RV 10.61.8); Pa_n.ini refers to da_ks.ina_tya (4.2.98): Maha_bha_rata (Nalopa_khya_na) refers to daks.in.a_patha as south of Avanti (Malwa) and the Vindhyas and to the south of the Vidarbhas and the Southern Kosalas (who lived on the banks of Wardha_ and Maha_nadi_). The age of the later Videhas had the names of Nimi and Kara_la as kings who expanded into the territory extending to the Reva_ or the Narmada_ and the Goda_vari_ rivers. Nimi’s Vidarbha region included the modern Berar and also varada_tat.a (region between Wardha_ and Waingan:ga_) and up north upto the river Payos.n.i_, a tributary of Ta_pti_ river. Nimi was of Yadu lineage (Matsya Pura_n.a 44.36; Va_yu Pura_n.a 95.35-36).



Br.hada_ran.yaka Upanis.ad refers to a sage Vidarbhi_ Kaun.d.inya (an apparent derivation from the capital city of Vidarbha called Kun.d.ina, which is associated with a place in the Ch_n.d.ur ta_luk of Amraoti, on the banks of Wardha_ river). Sa_tvatas and Bhojas are also referred to as offshoots of the Yadu on the banks of the Yamuna_. (Matsya Pura_n.a 44.36; Va_yu Pura_n.a 95.35-36). Bhojas also seem to have ruled Dan.d.aka (da_n.d.ako na_ma bhojah ka_ma_t bra_hman.akanya_m abhimanyama_nas sabandhu ra_s.t.ro vinana_s’a: a Bhoja king known as Da_n.d.akya, or king of Dan.d.aka, made an attempt on a bra_hman.a girl and perished along with his relations and kingdom: *Kaut.ili_ya Arthas’a_stra*).

The finds at Mehrgarh dated to ca. 7000 BC indicate the early phases of village farming communities communities. Prof. Possehl provides a broad spectrum of phases related to the absolute chronology of the "Indus Age":

- Beginnings of Village Farming Communities and Pastoral Camps (Kili Ghul Mohammad and Burj Basket-marked phases) 7000-4300 BC

- Developed village farming communities and pastoral societies: 4300-3200 BC

- Early Harappan phases (Amri-Nal, Kot Dijian, Sothi-Siswal, Damb Sadaa) 3200-2500 BC

- Mature Harappan 2500-1900 BC

- Post-urban Harappan 1900-1000 BC

- Early Iron Age 1000-600 BC

(After Gregory L. Possehl, 1999, *Indus Age: The Beginnings*, New Delhi, Oxford and IBH Publishing Co., Table 1.2)

8. Evolution of Indian Civilization and Vedic Culture

"The discovery of unburied skeletons among the latest levels of the Harappan occupation at Mohenjodaro combined with uncritical and inaccurate readings of the Vedic texts led some scholars to claim that the decline of the Indus civilization was the result of 'invasions' or 'migratgions' of Indo-Aryan speaking Vedic/Aryan tribes. (Wheeler, R.E. Mortimer, 1968, The Indus Civilization, 3rd edn., *Cambridge History of India*, Cambridge, Cambridge University Press). The invasion and/or migration models assumed that the Indo-Aryan speaking Vedic communities destroyed the Indus cities and replaced the complex urban civilization with their new rituals, language and culture. Many scholars have tried to correct this absurd theory, by pointing out misinterpreted basic facts, inappropriate models and an uncritical reading of Vedic texts. (Jarrige, Continuity and Change in the North Kachi Plain; Shaffer, Reurbanization: The Eastern Punjab and Beyond; loc. cit. Kenoyer, J., 1998, *Ancient Cities of the Indus Valley Civilization*, Karachi, Oxford University Press). However, until recentgly, these scientific and well-reasoned arguments were unsuccessful in rooting out the misinterpretations entrenched in the popular literature. (Brown, Dale M., ed., 1994, *Ancient India: Land of Mystery*, Alexandria, Va., Time-Life Books)...there is no archaeological or biological evidence for invasion of mass migrations into the Indus valley between the end of the Harappan Phase, about 1900 BC and the beginning of the Early Historic Period, around 600 BC. In Central Asia and Afghanistan the Bactria-Margiana Archaeological Complex

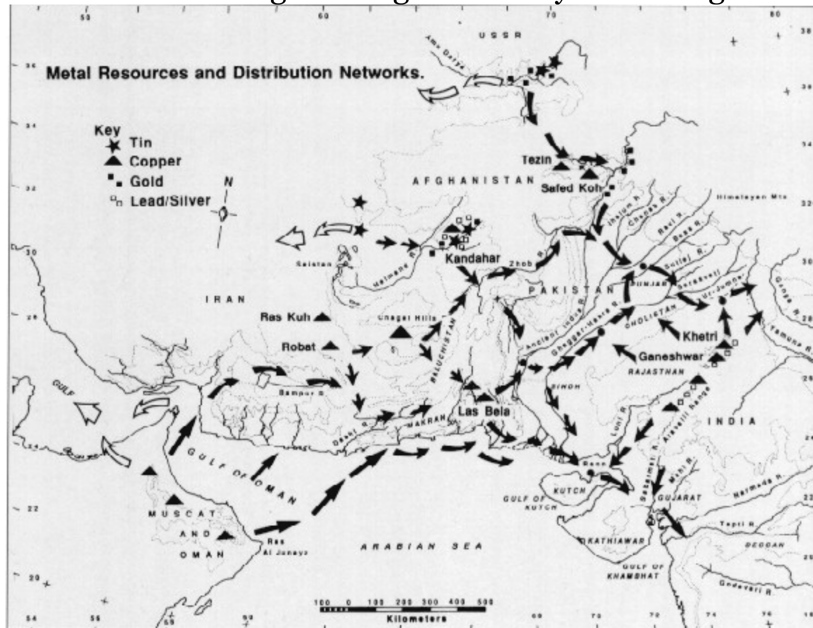
(BMAC), dating ffrom around 1900 to 1700 BC, represents a complex mixture of nomadic and settled communities, some of these may have spoken Indo-Aryan dialects and practiced Indo-Aryan religion. These communities and their ritual objects were distributed from the desert oases in Turkmenistan to southern Baluchistan and from the edges of the Indus Valley to Iran. As nomadic herders and traders moved from the highlands to the lowlands in their annual migration, they would have traded goods and arranged marriages as well as other less formal associations resulting in the exchange of genes between the highland and lowland communities." (Kenoyer, J.M., 1998, p. 174).

Since Wheeler's hasty generalization, many discoveries have been reported which render it possible to reconstruct an indigenous and continued evolution and development of the civilization in the Sindhu Sarasvati River Basins. Outside these river basins, cultural complex of Bactgria-Margiana Archaeological Complex (BAMC) has been discovered. There is little evidence of cultural materials being transferred into or from this complex, though evidences of trade contacts have been identified. (Frederik T. Hiebert, 1994, Production evidence for the origins of the Oxus civilization, *Antiquity 68*: 372-87; Victor Sarianidi, 1993, Recent archaeological discoveries and the Aryan problem, in: *South Asian Archaeology, 1991*, Adalbert J. Gail and Gerd J.R. Mevissen, eds., Stuttgart, Steiner: 252-63). The internal migrations to the Ganga-Yamuna, caused principally by the desiccation of the Sarasvati River, have been well documented, with reference to new surveys and excavations of new sites. (Bisht, Ravinder Singh, 1987, Further excavations at Banawali, 1983-84, in: B.M.Pande and B.D. Chattopadhyaya, eds., *Archaeology and History*, Delhi, Agam Kala Prakashan: 135-56; Dikshit, K.N., 1991, The legacy of Indus civilization in North India, in: *Puratattva* 21: 17-20; Joshi, Jagat Pati, 1978, Interlocking of Late Harappan culture and Painted Grey Ware culture in the light of recent excavations, in: *Man and Environment 2:* 90-101; Shaffer, Jim G., 1993, Reurbanization: the eastern Puunjab and beyond, in: Urban Form and Meaning in South Asia in: Howard Spodek and Doris Meth Srinivasan, eds., *The Shaping of Cities from Prehistoric to Precolonial Times,* Washington D.C., National Gallery of Art: 53-67). Similarly, the migrations from Sind to Rann of Kutch and beyond, southwards towards the Saurashtra and Kathiawar regions of Gujarat have also been documented based on new surveys and excavations. (Bahn, Kuldeep K., 1992, Late Harappan Gujarat, in: *Eastern Anthropologist* 45: 1-2: 173-92; Possehl, Gregory L., 1992, The Harappan civilization in Gujarat: the Sorath and Sindh Harappans, in: *Eastern Anthropologist* 45:1-2: 117-54; Possehl, Gregory L., 1991, The Harappan cultural mosaic: ecology revisited, in: Catherine Jarrige, ed., *South Asian Archaeology, 1989*, Madison, Wis., Prehistory Press: 237-44). A review of these new discoveries and evaluations have led to the presentation of alternative theories to explain the decline of the Indus cities and the continuation of the urban Indo-Gangetic tradition. (Kenoyer, J. Mark, 1995, Interaction systems, specialized crafts and culture change: the Indus Valley tradition and the Indo-Gangetic Tradition in South Asia, in: George Erdosy, ed., *The Indo-Aryans of Ancient South Asia: Language, Material Cultgure and Ethnicity*, Berlin, de Gruyter, 213-57; Shaffer Jim. G, and Lichtenstein, Diane A., 1995, The cultural

tradition and palaeoethnicity in South Asian archaeology, in: George Erdosy, ed., *The Indo-Aryans of Ancient South Asia: Language, Material Cultgure and Ethnicity*, Berlin, de Gruyter, 126-154).

Bharat c. 500 B.C. (Republics at the time of coronation of Bimbisa_ra c. 545-44 BC) (After Raychaudhuri, opcit., p. 174). The most remarkable feature of the civilization during all its phases from 7000 to 1000 BC is the homogeneity of monuments and artifacts; the agreement among Harappa, Mohenjodaro, Kalibangan, Dholavira, Banawali, Kunal and Lothal is striking indeed, while regional variations are overshadowed by the preponderant shared features of life such as domestication of animals, cultivation of wheat and barley, canal irrigation and use of wells, house-building, organization of towns, weaving of textiles, wheel-turned pottery, river navigation, use of carts, metal-working, ornament-making using faience, ivory, bone, shell and semi-precious stones and use of inscriptions to facilitate trade. (cf. Marshall, John, 1931, The age and authors of the Indus Civilization. in: Marshall, John, ed., *Mohenjodaro and the Indus Civilization*, 3 vols., Arthur Probsthain, London: 102-12). The homogeneous nature of the culture was evolved and sustained over the largest Bronze Age civilization of the world, covering an estimated area of 1,310,000 square kilometers. This is in comparison with the Mesopotamian Civilizzation which covered an estimated area of 400,000 square kilometers during the Akkadian Dynasty and with the Egyptian Civilization which covered a small area of ca. 17,100 square kilometersduring the Old Kingdom. (Butzer, Karl W., 19776, *Early Hydraulic Civilization in Egypt: A study in Cultural Ecology*, Chicago, University of Chicago Press, Prehistoric Archaeology and Ecology Series: 83). The region covered the entire drainage system of the Sarasvati River, the northern Ganga-Yamuna doab in Uttar Pradesh, Punjab, Haryana, western fringe of southern and central Rajasthan, Gujarat, almost the whole of Pakistan (excepting for the northern mountainous areas) and southern Afghanistan. That homogeneity in culture was maintained over such vastg distances given the transport systems of river crafts and bullock-carts (and perhaps pack-animals) is an era of peaceful coexistence unparalleled in the history of human civilization. For example, the mature Harappan pottery was seen over all parts of the civilization area and so were the seals, styles of beads, brick sizes and weights commonly shared. This lends credence to the possibility that this entire area was truly a Linguistic Area and given the legacy which continued in India into the historical periods, the decipherment of the inscriptions have to be related to the essential semantic unity of languages currently spoken in many parts of India also as a legacy of the cultural unity sustained during ancient times. On the aspects of cultural unity, Possehl notes (1999, p. 157): "From the archaeological record one senses that in spite of this differentiation, we are still seeing a single ancient culture at some level of abstraction. How were the norms of this culture maintained over such immense distances? What kept it all together? The answer to these questions is obviously 'communication', either direct, face to face contact, or a more indirect form. Without some convention of communication, areas that are geographically removed from one another tend to take their own course of cultural change and gradual differences will emerge. The two most obvious mechanisms that can be documented that would have sustained the mid-range and longer communication networks are the movements of pastoral nomads, and other itinerants, some of which are tied to seasonal changes, and the internal commerce of the Indus Age."

Sources of tin: the great enigma of Early Bronze Age archaeology



Network of mineral resource locations: tin, copper, gold, lead/silver (After J.M. Kenoyer, 1998, Fig. 5.20f). “Copper ore was probably smelted near the mining sources and brought into the Indus Valley as bun-shaped ingots. Major copper sources are located to the west of Baluchistan, the east in Rajasthan and across the gulf in Oman. Any of these areas could have produced enough copper to supply the entire Indus Valley civilization, but the Indus merchants were trading with all these areas. One can imagine traders shouting out the benefits of Oman copper. ‘It is a bit more expensive, but more pure than the slag from Baluchistan or Rajasthan.’ A merchant from Baluchistan would shout back, ‘Omani copper is soft like the meat of a date, while the highland copper is strong and hard like the pit.’ Marine shell was also brought from three sources. The Gulf of Kutch and Saurashtra to the east produced species of shell that were used to make bangles, ladles and inlay. Similar species were obtained from the coast west of Karachi, and a third source was the Omani coast..At the coastal site of Balakot, a local species of clam shell was used.” (J.M.Kenoyer, 1998, p. 94).

R.s.i Gr.tsamada is ecstatic while adoring Sarasvati in the Rigveda:

> AiMb?tme/ ndI?tme/ deiv?tme/ sr?Svit ,
> A/à/z/Sta #?v Smis/ àz?iStm! AMb ns! k«ix .
> Tve ivña? srSvit ïi/tayU<?i; de/Vyam! ,
> zu/nhae?Çe;u mTSv à/ja< de?iv ididfœiF n> .
> #/ma äü? srSvit ju/;Sv? vaijnIvit ,
> ya te/ mNm? g&Tsm/da \?tavir ià/ya de/ve;u/ juþ?it .
> 2.041.16 Sarasvati_, best of mothers, best of rivers, best of goddesses, we are, as it were, of no repute; grant us, mother, distinction. [ambitame, nadi_tame, devitame: the superlatives of ambika_, a mother, nadi_ , a river and devi_, a goddess].

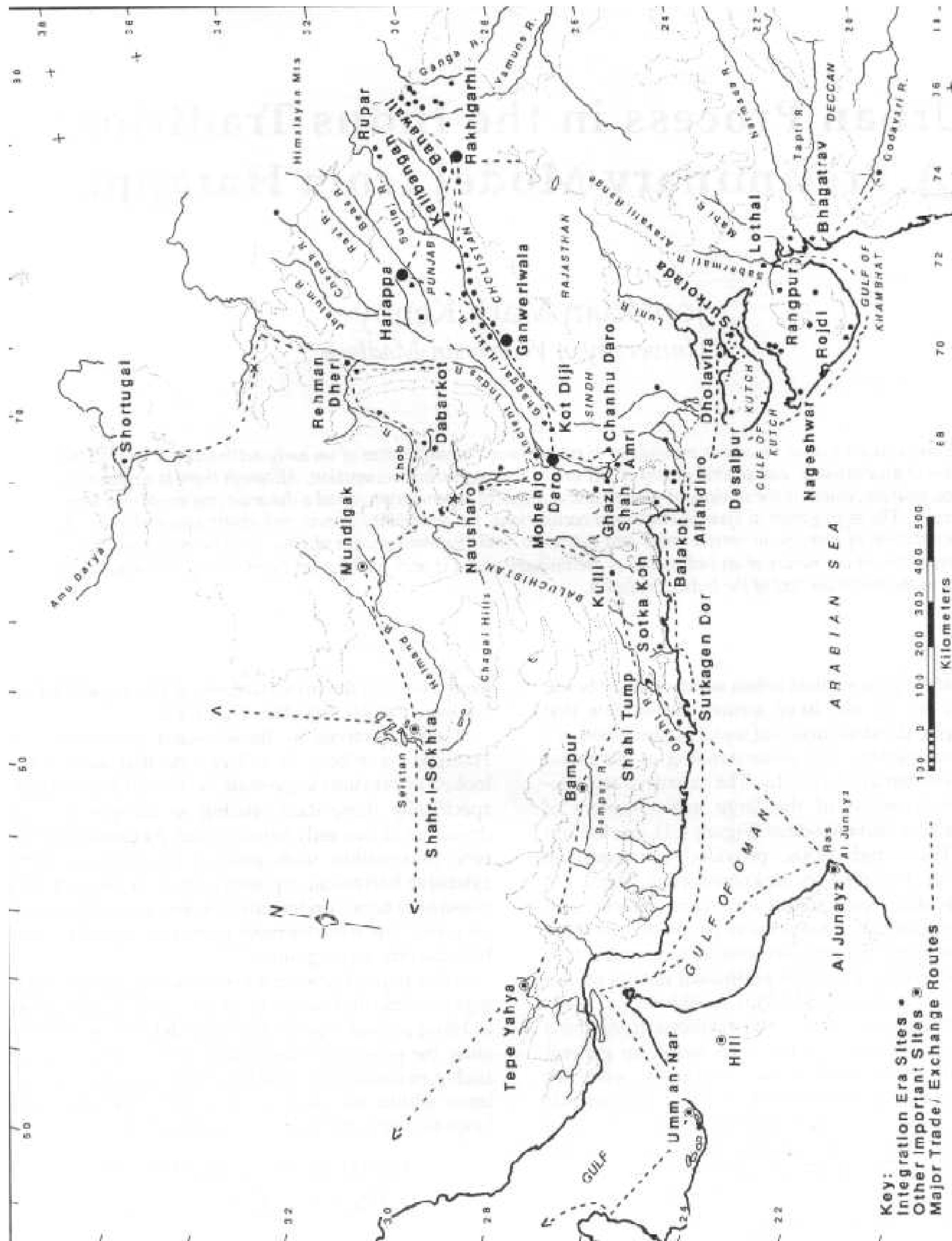
2.041.17 In you, Sarasvati_, who are divine, all existences are collected; rejoice, goddess, among the S'unahotras, grant us, goddess, progeny. 2.041.18 Sarasvati_, abounding in food, abounding in water, be propitiated by these oblations, which the Gr.tsamadas offer as acceptable to you, and precious of the gods.

Sarasvati_ is among the 27 synonyms for a river (Hemachandra, Abhida_na cinta_man.i, 4, 145-146: nadi_, hiran.yavarn.a_, rodhovakara_, taran:gin.i_, saiva_livi, vaha_, hradini_, srotasvini_, nimnaga_, srota, nirjharin.i_, sarit, tat.ini_, ku_lan:kas.a_, va_hini_, kar.su_, dvi_pavati_, samudradayita_, dhuni, sravanti_, sarasvati_, parvataja_, a_paga_, jaladhiga_, ku_lya_, jamba_lini_.

An alternative view could be that the Pari_n.ah may be a reference to Pa_ripa_tra. "Pa_ripa_tra is the western part of the Vindhya range extending from the course of the Chambal to the Gulf of Cambay (*Asiatic Researches*, vol. VIII, p. 338); according to Dr. Bhandarkar it is that portion of the Vindhya range from which the rivers Chambal and Betwa take their rise (*History of the Dekkan*, see.III; Vara_ha Pura_n.a, ch. 85). It comprised the Aravali mountains and the hills of Rajputana including the Pathar range which is perhaps a contraction of Pa_ripa_tra. It appears to have included the countries of Apara_nta, Saura_s.t.ra, S'udra, Ma_lapa (Ma_lava), Malaka and others (Ku_rma Pura_n.a, Pu_rva ch. 47), in short a great portion of the western coast of India. According to the Ra_ma_yan.a, Pa_ripa_tra or Pa_riya_tra was situated on the western sea (Kishkinda_ Ka_n.d.a, ch. 42, v.20; Pa_riya_tra = Pa_ripa_tra: Va_mana Pura_n.a, ch. 13; Brahma_n.d.a Pu_ra_n.a, pt. II, ch. 16)." (N. Dey, 1979, *The Geographical Dictionary of Ancient and Medieval India*, Delhi, Cosmo Publications, p. 149). This equivalence and the pattern of movement of the people away from the Sarasvati and Dr.s.advati_ towards the Chambal indicates the possibility that the name vais'ambha_lya of Sarasvati_ river may indeed refer to the shortened popular form: Chambal River. Zimmer notes that Kavas.a was the Purohita of the joint tribes named Vaikarn.a who comprised the Kuru Pa_n~ca_las. (cf. *Vedic Index*, Vol. I, p. 143)."...the Sarasvati_ still has a similar name, Vai'sambhalyA (with many variants, always a sign of foreign origin, in the Brahmana texts: TB 2.5.8.6, -bhAlyA, -pAlyA, -bAlyA Ap'SS 4.14.4, -bhAlyA BhAr'sikSA; cf. also RV vi'spAla?), which is to be derived from something like *visambAz/*visambAL, ..." (Witzel, M., 1999, Substrate languages in OIA, *EJVS*, 1999, p. 11) Taittiri_ya Bra_hman.a's reference to Sarasvati_ as vais'ambhalya_ (2.5.8.6). is elaborated by Sa_yan.a: vis'va_m praja_na_m bharan.am pos.an.am vis'ambhalam tatkartum ks.ama_ vis'ambhalya_ ta_dr.s'i_. Sarasvati_ is thus vais'ambhalya_ or one who brings up the whole people. This epithet is an apparent expansion of Sarasvati_ as a river nourishing the settlements of people with her waters and promoting agriculture and other livelihood activities of the people, she was indeed the giver of food, va_jinni_vati_. Sarasvati_ is called satyava_k: pra te mahe sarasvati_ subhage va_jinni_vati_ satyava_ce bhare matim idam te havyam ghr.tavat sarasvati satyava_ce prabharema_ havi_m.si: (TB 2.5.4.6; S'ri_ Ma_dhava explains the dative form, sartyava_ce: anr.tava_kyarahita_yai; thus, Sarasvati_ as Va_k is all truth, free from

falsehood; in RV 1.3.11, she is codayitri_ su_nr.ta_na_m, the impeller of pleasing and true speeches). The waters are medicinal for the world (vis'vabhes.aji_h: TB 2.5.8.6). Sarasvati_ is sumr.d.i_ka_ (Taittiri_ya A_ran.yaka 1.1.3, 21.3, 31.6, 4.42.1); this is explained as having good soil (sumr.d), that is, land having good (fertile) soil. Sarasvati_ is described as both the land and the water: sarasvati saroyuktabhu_miru_pa is.t.ake (TA 1.1.3). During her flight back from heaven, Ga_yatri_ encountered the Gandharva Vis'va_vasu who robbed her of the soma. Gods became anxious as Ga_yatri's return from heaven with soma was being delayed and realized that the Gandharvas had stolen soma. (S'B 3.2.4.2). Then, they planned to send Va_k to the Gandharvas, who were fond of women, to retrieve soma for the gods. (S'B 3.2.4.3). In the encounter of Va_k with the Gandharvas, the latter demanded that the gods should offer Va_k in exchange for soma. The gods agreed to the demand with the condition that if Va_k wanted to return the Gandharvas should not force her to remain with them against her will (S'B 3.2.4.4). Both the gods and gandharvas began to woo Va_k; gandharvas recited the Veda (S'B 3.2.4.5); gods played on a lute to entice Va_k. Gods won and the gandharvas lost both the soma and Va_k. (S'B 3.2.4.6-7). Mantraru_pa_ va_k, deified speech becomes, in the Bra_hman.as, the goddess of speech. She is associated with Vis.n.u and described as his tongue or residing in his mouth. (Skanda. P. 7.33.96). In Va_yu Pura_n.a (1.23.34), Sarasvati_ is described as one with a loud roar, maha_na_da_.

The name of one of the two gandharvas, namely, sva_n, who guarded the stolen soma is significant. In Yas't 10.67, Mitra is stated to come, driving in a chariot, from the eastern continent Arezahi_ to the splendid continent of Xvaniratha. The last two lines of the verse are rendered by Gershevitch as: "(Mitra comes) equipped with prompt energy, Mazda-created fortune, and Ahura-created victoriousness". (I. Gershevitch, *The Avestan Hymn to Mithra*, Cambridge, 1959). The name of the continent, Xvaniratha, seems concordant with Sva_n, the gandharva who guarded the soma. The eastern continent, 'Arezahi_' may be a reference to Arachosia < haraquaiti < sarasvati_ region. Sarasvati_ is called 'ams'umati_', full of the soma: "...Soma, frightened by Vr.tra, fled to the Ams'umati_, flowing in the Kuruks.etra region. He settled there and gods, too, settled there along with him. They used soma, and thereby evolved Soma-sacrifices." (Su_ryakanta, Sa_ras, Soma and Si_ra_, *ABORI*, vol. XXXVIII, Poona, 1958, p. 115).



Map showing major sites and interaction networks of the Sarasvati Tradition (After Kenoyer, J.M., 1991, Urban Process in the Indus Tradition: A preliminary model from Harappa, in: Meadow, Richard H., ed., 1991, *Harappa Excavations 1986-1990: A multidisciplinary approach to third millennium urbanism.* Madison: Prehistory Press, Monographs in World Archaeology, 3.

9. Migration of Ailas

Yadu are mentioned in the Rigveda; Yadu is associated with Turvas'a, Druhyu, Anu and Pu_ru: RV 1.108.8; RV 1.36.18; 6.45.1;8.6.46; about the middle of the second millennium BC, epigraphs of the Kassites and Mitanni refer to Rigvedic gods (Su_rya—shurias; Marut—maruttash; Indra, Mitra, Varun.a, Na_satyas and Daks.a—dakash, star, *Cambridge Ancient History*. 1.553). Gandha_ra princes are referred to as descendants of Druhyu in Matsya 48.6 and Va_yu 99.9 Pura_n.as. "According to tradition in chapter XXIV (G. Grierson, 1907, *Imperial Gazetteer of India*, I, pp. 349 f.) the Ailas or Aryans began at Allahabad, conquered and spread out north-west, west and south, and had by Yaya_ti's time occupied precisely the refgion famed as Madhyades'a. They possessed that Mid-land definitely and made it their own thoroughly, so that it was 'their true pure home', as Sir G. Grierson describes it linguistically. (ibid., p. 357). They expanded afterwards into the Panjab and East Afghanistan, into West India and the north-west Dekhan, into East and South Bihar and into Bengal—precisely as he finds the Aryans did linguistically in those very regions, which he calls the 'Outer Band'. (ibid., p. 358). Also it has been pointed out that the Ayodhya_ realm was non-Aila, was not subdued by the Ailas and was only influenced by them. This agrees exactly with his linguistic inference, that in Oudh 'there is a mixture (of language) of the same nature, although here the Midland language has not established itself so firmly as it has in the west and south.' (ibid. p. 359). Thus the political account as tradition reveals it accords precisely with Sir. G. Grierson's linguistic exposition, and explains the linguistic facts simply and fully. Current opinion, in order to explain those facts, postulates not only an invasion of Aryans from the north-west, but even a double invasion, and the theory is that 'the inhabitants of the Midland represent the latest stage of Indo-Aryan immigration', and that the latest invaders entered 'into the heart of the country already occupied by the first immigrants, forcing the latter outwards in three directions, to the east, to the south and to the west.' (ibid., p. 358). This theory is improbable in itself, and certainly implies a severe and bitter struggle between the second and the first immigrants, of which one would expect to find some echo in tradition, for it concerned the very heart of India, yet there is absolutely none. It is wholly unnecessary according to the tradition…These conclusions raise the question, what does tradition say about the origin of the Ailas or Aryans? It makes the Aila power begin at Allahabad and yet distinctly suggests that they came from outside India. The legends and fables about the progenitor Puru_ravas Aila all connect him with the middle Himalayan region. He was closely associated with the Gandharvas. His wife Urvas'I_ was a Gandharvi_, as well as called an apsaras. The places he frequented were Manda_kini_, Alaka_, the Caitraratha and Nandana forests, the mountains Gandhama_dana and Meru, and the land of Uttara Kuru—regions to which the Gandharvas were assigned. (Matsya 114.82; MBh. 5.110.3830-1; 6.6.212; Vis.n.u 39 to 41). From the Gandharvas he obtained sacrificial fire; his sons were known in the Gandharva world (Ku_rma 1.23.46); and he ultimately became united with the Gandharvas. Further, the fables about his birth point to that region, and two accounts connect his alleged parent Ila with the northern country Ila_vr.ta, which they say was named after him. (Matsya 12.14; Padma 5.8.119)…that (north) region, the

countries in and beyond the middle of the Himalayas, has always been the sacred land of the Indians. Indian tradition knows nothing of any Aila or Aryan invasion of India from Afghanistan, nor of any gradual advance from thence eastwards. On the other hand it distinctly asserts that there was an Aila outflow of the Druhyus through the north-west into the countries beyond, where they founded various kingdoms and so introduced their own Indian religion among those nations. (*JRAS*, 1919, pp. 358-61). The north-west frontier never had any ancient sacred memories, and was never regarded with reverence. All ancient Indian belief and veneration were directed to the mid-Himalayan region, the only original sacred outside land (See the eulogy of the Northern region: MBh. 5.110; 6.12); and it wasd thither that rishis and kings turned their steps in devotion, never to the north-west. The list of rivers in Rigveda 10.75 is in regular order from the east to the north-west (See M.A. Stein, *JRAS*, 1917, p. 91)—not the order of entrance from the north-west but the reverse. If the Aryans entered India from the north-west, and had advanced eastward through the Panjab only as far as the Sarasvati_ or Jumna when the Rigvedic hymns were composed, it is very surprising that the hymn arranges the rivers, not according to their progress, but reversely from the Ganges which they had hardly reached. This agrees better with the course of the Aila expansion and its outflow beyond the north-west. (Perhaps the arguments used to prove the advance of the Aryans from Afghanistan into the Panjab might simply be reversed)...Suda_s's battle with the ten kings...(Suda_s) was an Aila king of North Pan~ca_la, and the Ailas (or Aryans) had entered and dominated North India long before his time. It was part of his conquests westward into the Panjab...Tradition or myth thus directly indicates that the Ailas (or Aryans) entered India from the mid-Himalayan region, and its attitude towards the NW frontier lends no support to any invasion from that quarter. (The only passages which may lend support to the theory of a north-western invasion are the two in the Ra_ma_yan.a, which make Ila king of Ba_lhi or Ba_lhi_ka, if these words mean Balkh; but they might mean the Va_hli_ka country in the Panjab...)...Indian tradition suggests a reverse origin for the Iranians, which is linguistically tenable, which harmonizes with the Boghazkai treay, and which can account for their language and religion....Puru_ravas was succeeded by A_yu at Pratis.t.ha_na (the later Praya_ga or Allahabad), and another son Ama_vasu founded another kingdom, the capital of which was then or afterwards Ka_nyakubja (Kanauj). A_yu was succeeded by Nahus.a, and another son Ks.atravr.ddha established himself at Ka_s'i. Nahus.a was a famoud king. His son and successor Yaya_ti was a renowned conqueror, extended his kingdom widely and was reckoned a samra_j (MBh. 1.75,3156)...He had five sons, Yadu, Turvasu, Druhyu, Anu and Puru..." (Pargiter, F.E., 1922, *Ancient Indian Historical Tradition*, Delhi, Motilal Banarsidass, pp. 296-298, p. 302, p. 259). According to Skanda Pura_n.a, the river A_paga__ (A_paya_ of Kurudes'a) had S'ivaks.etras (I.iiiu.3.10); a_paya_ was a tributary of Sarasvati_ and Maha_bha_rata (Karn.a Parvan XLIV.10) locates the river in Va_hika des'a (that is, Punjab) ruled by S'alya.

All the four treaty gods are mentioned in one hymn of the R.gveda (RV. 10.125.1). Paul Thieme demonstrated that the gods of the Mitanni treaties are specifically

Vedic gods, and that they cannot be Proto-Aryan. Macdonnel is more emphatic: "It is a fact, however, that this particular grouping of the gods Varun.a and Mitra, Indra and Na_satyau, with these forms of their names, can be traced only in the Veda. For this reason I agree with Jacobi, Konow and Hillebrandt in considering these gods to be Indian, Vedic deities and that there is no possible justification for any other view. We shall have to assume that, just as there were Aryan immigrations into India from the west, there must have been isolated migrations back to the west." (Macdonnel, opcit, 1927, p. 805).

Skanda Pura_n.a describes the course of the Saravati_ River. Sarasvati_ issues from the water-pot of Brahma_ (1.ii.56.13; 3.ii.25.1-7, 10-16, hence called Brahman.ahsuta_: 3.ii.25.7) and flows on a downward course from Plaks.a (7.1.33.40-41) on the Himalayas. At Keda_ra, she turns west (pas'cima_bhimukhi_) and conceals herself underground. (7.i.35.25,26). Beyond Pa_pabhu_mi, she reaches Gandharvaku_pa and flows further on a westward course. (7.i.26,27). Traversing through Bhu_ti_s'vara and Rudrakot.i before reachintg S'rikan.t.ha des'a (7.i.35,29-31; with its capital Stha_nes'vara or Thanesar near Kuruks.etra), she reaches Kuruks.etra and flows on through Vira_t.anagara, Gopi_yanagari (near Vira_t.anagara) and Deviks.etra, before reaching Pas'cima des'a (7.i.36.52). She then traverses the Kharjuri_vana (where she is called Nanda_), Ma_rkan.d.a_s'rama, Arbuda_ran.ya, Vat.avana, Vam.s'astamba, Ka_kati_rtha, Dha_res'vara, Pun.d.ari_ka, Ma_tr.ti_rtha, Anaraka, San:games'vara, Kot.i_s'vara and Siddhes'vara. She joins the Pas'cima Sa_gara. (7.i.35.32-51). She is called Pra_ci_ Sarasvati_ (5.i.57.31), Sa_vitri_ and Vedama_ta_ (5.iii.3.10). As Vedama_ta, she is the very personification of the Vedic culture. She is bra_hmi_ mu_rtih, the incarnation of Brahma_ and hence, sacreed (5.iii.9.47). (loc.cit. A.B.L. Awasthi, 1965, *Studies in Skanda Pura_n.a,* Pt. I, Lucknow, Kailash Prakashan, pp. 153-154).

10. Plaks.a

Sarasvati_ River is said to originate from the Plaks.a tree. What is the nature of the Plaks.a? Where was the tree located?

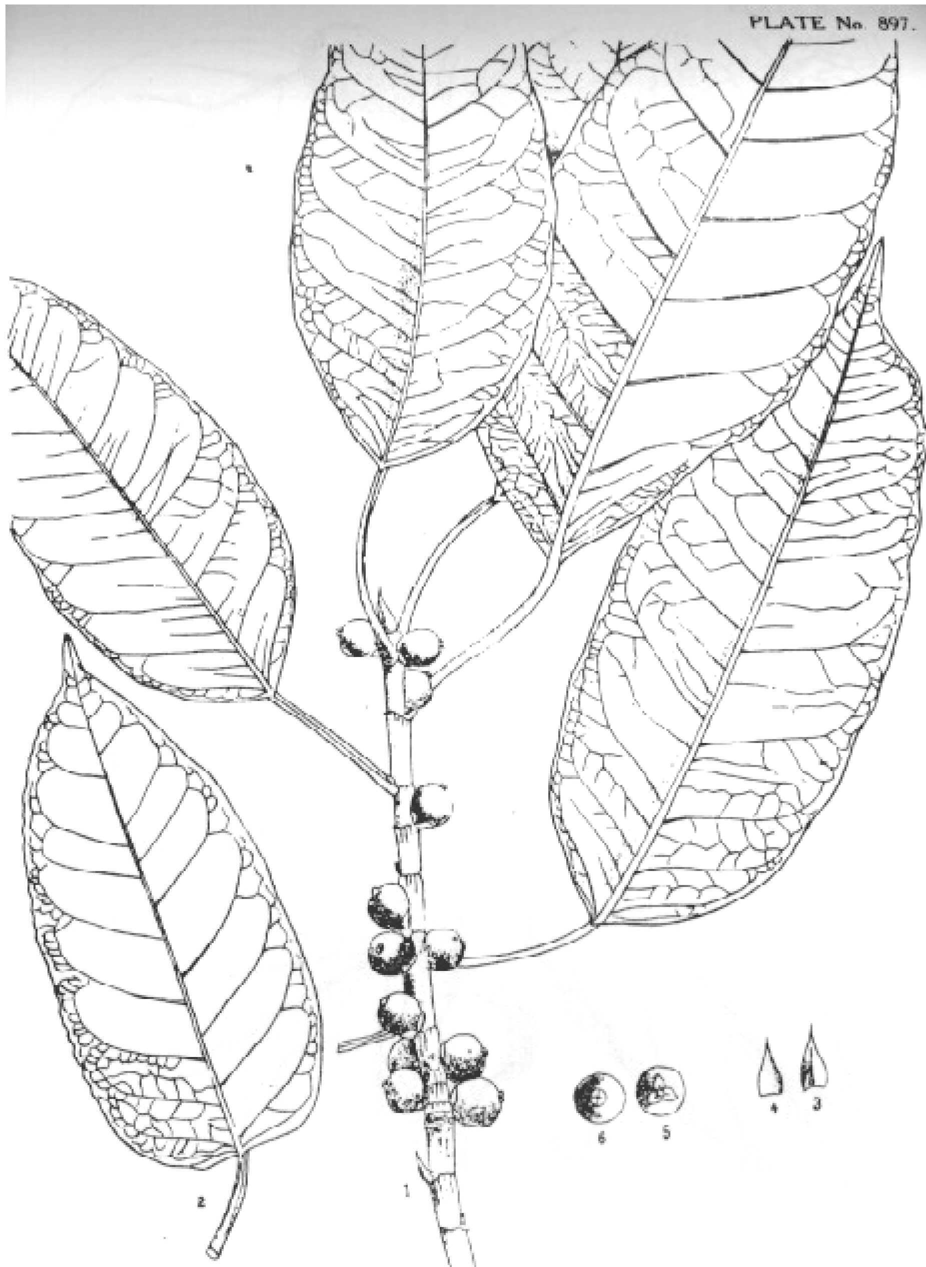


Ficus Gibbosa or infectoria or caulocarpa or caulobotrya or urostigma stipulosa (After Basu, B.D., 1913, *Indian Medicinal Plants*, Pt. IV, Pl. 892)

Ficus rumphii or cordifolia (After Basu, B.D., 1913, *Indian Medicinal Plants*, Pt. IV, Pl. 896B) This monumental work provides the following details about this plant. Distribution: Punjab, N. India, Assam, Burma, Central India, W. Peninsula, S. India, Malay Peninsula, Malay Archipelago. A moderate sized deciduous tree at first usually epiphytic, all parts glabrous...The Santals use the fruit as a drug. The juice is used in the Konkan to kill worms and is given internally with turmeric, pepper and ghi, in pills, the size of a pea, for the relief of asthma; it causes vomiting. Names: Assam: pakri; Bengal: gaiaswat, galasvattha; Burma: nyaungbyu; Cachar: satbur; Canarese: bettaarali, bettaragi, kadarali; garwal: kabaru; garo: prab; Hindi: gagjaira, gajiun, gajna, kabar, khabar, pakar, pilikhan, papal, pipul; jaunsar: pilkhoi; kolami: sumanpipar; Kumaon: kabaipipal; Lohardugga: ganjar, kabaipipal, sumanpipar; Marathi: asht, ashta, pair, payar; Mundari: duranggahesa; Nepal: pakar; Punjab: badha, palak, pilkhan, pulakh, rumbal; Rajputana: paraspipal; Santali: sunamjor. The sp. shown in Plate 896A is described as ficus religiosa with distribution in sub-Himalayan forests, Bengal, Central India and is referred to variously as asvattha or papal; Kolqamui: hesar, hissa, pipar; Konkani: pimpoll; Santal: hesak; Tulu: attasa; Uriyua: osto, oshwottho, pippolo, usto.

> itti white fig, ficus infectoria, ficus gibbosa prarasitica; tailed oval-leaved fig, ficus talboti; icci oval-leaved fig; jointed ovate-leaved fig, ficus tsiela; icciya_l, iccil jointed ovate-leaved fig; iratti jointed ovate-leaved fig; subserrate rhomboid-leaved fig, ficus gibbosa tuberculata; iratakam jointed ovate-leaved fig; ir-ali = white fig; ir-r-I tailed oval-leaved fig (Ta.); itti, ittiy-a_l waved leaved fig-tree, ficus venosa; a parasitical plant, loranthus coriaceus (Ma.); itti ficus gibbosa (Kod.)(DEDR 460).

cuvalai papal; cuvi white fig, ficus infectoria; stone fig, ficus gibbosa parasitica (Ta.); cuvann-a_l ficus infectoria (Ma.); juvvi mara wavy-leaved fig tree, ficus infectoria (Ka.); ficus tsiela (Te.); papal, ficus religiosa (Kol.); ju_ meri sp. ficus religiosa (Pa.); ju_ ma_r.a ficus sp. (Go.)(DEDR 2697).



Ficus lacor, Linn. Or ficus infectoria Roxb. (After Basu, B.D., 1913, *Indian Medicinal Plants*, Pt. IV, Pl. 897). The work describes the medicinal plant as a large spreading deciduous fast-growing tree, all parts glabrous...Distribution: plains and lower hills of India, Ceylon, Malaya; all parts are acrid, pungent, cooling; useful in diseases of the blood and the vagina, ulcers, burning sensations, biliousness, kapha, inflammations, leprosy, hallucinations, loss of consciousness (Ayurveda)...the fruit is sour; the seeds are useful in bronchitis, biliousness, scabies, boils, inflammation (Yunani). The bark

of this, along with the barks of other four species of Ficus and of Melia azadarichta, pass by the name of Panchavalkala (or the five barks); they are used in combination. A decoction is much employed as a gargle in salivation, as a wash for ulcers, and as an injection in leucorrhoea. Names: Bengal: pakar; Bombay: bassari, pakri, pipli; Burma: nyaungchin; Canarese: basari, basarigoli, juvvi, kabbasari, karibasri, plaksha, ulabasari; garo: prab; Gond: serelli; Gujarati: pepri; Hindi: kahimal, khabar, pakar, pilkhan, ramanjir; Kolami: baswesa; Konkani: killah; Kurku: pepere; Lambadi: katpipri; Malayalam: bakri, chakkila, chuvannal, itti, jati; Marathi: bassari, dhedumbara, gandhaumbara, lendwa, pakari, pepar; Mundari: basuhesa, dindaputkal, gusahesa, gusihesa, hesaputukaldaru, jojohesa; Nepal: safedkabra; NW Provinces: pakur; Punjab: bathar, janglipipli, pakhar, palakh, palkhi, pilkhan, pilkin; Sanskrit: ashvatthi, charudarshani, dridhapraroha, gardabhanda, jati, kandaralu, karpari, parkati, pimpari, plaksha, plavaka, shringi, suparshva, varohashakhi, vati; Saora: juvvi; Sinhalese: kalaha, kiripella; Tamil: jovi, kallal, kurugatti, kurugu, suvi; Telugu: badijuvvi, jati, juvvi; Tulu: basarigoli; Urdu: pakharia; Uriya: pakodo, rushorchona.

It is very complex indeed to precisely identify the ficus species intended by the various lexemes used in Indian languages. However, considering the consistency with which the word, plaks.a is used for ficus infectoria, it would appear that the plant referred to is the one shown in Plate 897, i.e., the *ficus lacor* or, Linn. or *ficus infectoria*, Roxb. This is confirmed by the use of the roots of Ficus infectoria as poultice on wounds in the Philippines, comparable to the external applications in Indian Medicine. (Quisumbing, E., 1978, *Medicinal Plants of the Philippines*, Manila, Katha Publishing Co., p. 237).

The lexeme **plaks.a** is explained in Monier Williams' Sanskrit lexicon in the following terms: the waved-leaf fig-tree, ficus infectoria (a large and beautiful tree with white fruit), AV.; dvi_pa (Pur.); (with prasravan.a, Ta_n.d.Br. name of the river Sarasvati, MBh; plaks.aga_ name of a river, VP; plaks.aja_ta_ rising near the fig-tree, name of the Sarasvati,l MBh; plaks.ati_rtha, plaks.a_vataran.a name of a place of pilgrimage Hariv.MBh.Ma_rkP.; plaks.atva the state or condition of being a fig-tree, MaitrS.; plaks.anyagrodha, du. Ficus infectoria and ficus indica, Pa_n. ii,2,29; plaks.asravan.a, plaks.aprasravan.a, plaks.ara_j, plaks.ara_ja source and king of the fig-tree, name of the place where the Sarasvati rises; plaks.avat surrounded by fig-trees, name of a river (prob. The Sarasvati); plaks.as'a_kha_ branch of the fig-tree, MaitrS.; plaks.asamudhbhava_, plaks.aja_ta_, plaks.a samudra-vacaka_ name of the river Sarasvati_; plaks.o_dumbara a species of tree, Kaus'.; pla_ks.a being or relating to or coming from the ficus infectoria, TS; AitBr; pl. the school of Pla_ks.i, Pa_n. iv, 2,112,Sch.; the fruit of the fig-tree, L.; pla_ks.aprasravan.a name of the place where the Sarasvati_ rises; pla_ks.i, pla_ks.aki, pla_ks.a_yan.a fr. plaks.a TA_r., TBr. Pa_n. iv,1,65,Sch. Plaks.ara (formed to explain plaks.a) caus. Praks.a_rayati to cause to stream forth, pour out, MaitrS.

Taittiri_ya A_ran.yaka (8.1.1) pinpoints the location of Kuruks.etra:

...tes.a_m kuruks.etram vedira_si_t tasyai kha_n.d.avo daks.ina_rdha a_si_t tu_rghnamuttara_rdhah parin.ajjaghana_rdhah mara utkarah...

The sacrifice performed by the devas used Kuruks.etra as their altar. The kha_n.d.ava (or region near kha_n.d.ava prastha or Indra prastha) constituted the southern half of this altar. Tu_rghna (or Srughna) was its northern half, Parin.at the lower or western half and the Marus or the Marwar desert was its rubbish pit. Parin.at was perhaps the lower part of the Sarasvati_-Dr.s.advati_ doab. (Bharadwaj, O.P., 1991, *Ancient Kuruks.etra*, New Delhi, Harman Publishing House: p. 8).

MBh composed in the cradle of Vedic civilization, refers to the rivers Sarasvati_ and Dr.s.advati_ as the northern and southern boundaries of the holy Kuruks.etra region; a sacred lake called ma_nus.a is said to be located at a distance of one kros'a to the west of the river a_paga_. (MBh. 3.83). The reference to ma_nus.a may be a reference to the lake Ma_nus.a close to Kuruks.etra,10 kms. west of Kaithal is a place called Mansa. A_paga_ is the a_paya_ of the R.gveda (3.23.4; the hymn composed by r.s.is devas'rava_ and deva_ta of the clan of Bharatas): Va_mana Pura_n.a calls Sarasvati_, kuruks.etra-prada_yini, since she flowed through the region of Kuruks.etra.

The yajn~a for the da_rs.advata session has to start near the confluence of river Dr.s.advati_ at Parin.ah. There are many references in S'an:kha_yana S'rauta Su_tra (Varadattasuta A_narti_ya and Govinda, Commentators., Alfred Hillebrandt, ed., 2 vols., Reprint, Delhi, 1981):

sarasvatya_ vinas'ane di_ks.a_ sa_rasvata_na_m (13.29.1)
prati_pam pu_rven.a paks.asa_ yanti (13.29.11)
apyaye dr.s.advatya_h (13.29.14)
samvatsare pari_n.ahyagni_na_dha_ya dr.s.advatya_ daks.in.ena ti_ren.a_gneyena_s.t.a_kappa_lena s'amya_para_se s'amya_para_se yajama_nja aiti (13.29.29)
trih plaks.a_m prati yamuna_mavabhr.thamabhyavayanti (13.29.30)

Jaimini_ya Bra_hman.a refers to Parin.ah as the name of a lake in the lower half of Kuruks.etra.

tes.a_m u tes.a_m pari_n.aditi kuruks.etrasya jaghana_rdhe saraskandantam di_ks.a_yai te pra_n~co yanti samaya_ kuruks.etram (Raghuvira, ed., Nagpura, 1954: 2.300**).**

La_t.ya_yana S'rauta Su_tra (10.19.1) explains Parin.ah as 'bhu_merunnataprades'ah' or risen ground:

samvatsara_du_rdhvam pari_n.am na_ma sthali_ kuruks.etre tasya_magni_na_dha_ya

This interpretation seems to be confirmed by Ka_tya_yana S'rauta Su_tra (24.6.32):

Kuruks.etre parin.ahi sthalegny a_dheyamanv a_rambhan.i_y a_ntam bhavati

in Tva? dxe/ vr/ Aa p&?iw/Vya #¦a?yas! p/de su?idn/Tve Aûa?m! , †/;Ö?Tya/m! manu?; Aap/yaya</ sr?SvTya< re/vdœ A?¶e iddIih . 3.023.04 I place you in an excellent spot of earth on an auspicious day of days; do you, Agni, shine on the frequent (banks) of the Dr.s.advati, A_paya_ and Sarasvati_ rivers. [In an excellent spot of earth: pr.thivya_ il.a_yaspade, in the footmark of the earth in the form of a cow; i.e. on the northern altar; frequented banks: ma_nus.e, relating to man or to Manu; implies, manus.yasam.caran.avis.aye ti_re, on a bank, a place frequented by men; the Dr.s.advati_ and Sarasvati_ rivers are well known (r.s.ayo vai sarasvatya_m satrama_sata, the seers performed a sacrificial season on the Sarasvati_; they drove away Kavas.a Ailu_s.a from the soma : Aitareya Bra_hman.a 2.19)].

Epilogue

Gopatha Bra_hman.a (2.20) states that worship of Sarasvati_ pleases Va_k, because Va_k is Sarasvati_: atha yat sarasvati_m yajati, va_g vai sarasvati_ va_cam eva tena pri_n.a_ti. The very institution of the yajn~a itself which is identified with the gods is also identified with Va_k (TB 1.3.4.5: atho praja_pata_v eva yajn~am pratis.t.ha_payati praja_patir hi va_k; TB 16.5.16: va_g vai sarasvati_ va_g vairu_pam vairu_pam eva smai taya_ yunakti; Sa_yan.a's commentary: va_k s'abda_tmika_ hi sarasvati_ vairu_pan~ ca va_ksamatutam; Sarasvati_ is speech in the form of sound (s'abda or dhvani); the word 'ru_pam' suggests a number of forms of speech; vairu_pam is the object denoted by speech). S'atapatha Bra_hman.a states that Sarasvati_ is speech and speech itself is sacrifice. (S'B 3.1.4.9,14). Sarasva_n is identified with mind and Sarasvati_ with Va_k. (sa_rasvatau tvo tsau pra_vata_m iti mano vai sarasva_n va_k sarasvaty etau: S'B 7.5.1.31; 11.2.4.9, 6.3). Sarasvati_ is pa_viravi_ (RV 2.1.11; AB 3.37); this is interpreted as s'odhayitri_ or as purifying; or, as sound created by a spear or lance (pavi_ra) or Indra's thunderbolt. [pa_viravi_ = a_yudhavati_]. Sarasvati_'s connection with the mind and the cow (beneficial yield) led her giving full inspiration (dhi_) to compose hymns, and, consequently, she became the goddess of wisdom. (J. Gonda, *Pu_s.an and Sarasvati_,* p. 10; Book Review, *JRAS*, 1986, no. 1, pp. 120-21). In the Brahma_n.d.a Pura_n.a (4.7.27), Sarasvati_ is described as one of the nine Ma_tr.kas accompanying Lalita_ in her fight with Bhan.d.a_sura.





Sarasvati_ personified as river goddess with apsaras pouring water from the heavens; Cave no. 29, Ellora; Va_ka_t.aka, 5th cent. A.D. [In Cave 6 (Maharwada) of Ellora, there is a female figure with a peacock on her left, a male figure is seen reading; an apparent representation of Sarasvati_ as goddess of learning; on the wall at the south entrance of Cave 8, there is a sculpture of Sarasvati_; descending to the court of Cave 16 by the south staircase, a cave about 37X15 feet has trwo square pillars and pilasters in front; on the backwall, there is a figure of Sarasvati_ holding a rosary].

Presiding deity of Vidya_-mandira established by Bhoja, the ruler of Parama_ra dyanasty of Dha_ra_, Ma_lawa (who reigned from 1018-10060 A.D. The king is said to have founded a Sanskrit College within the temple dedicated to Sarasvati_.) Now displayed as Stuart Bridge Collection (No.84); British Museum. Parama_ra, 1034 A.D. with a late na_gari inscription. She is standing in tribhanga pose, is bejewelled; has four arms; a garland is held in her left upper hand and a manuscript is held in her left lower hand. Five ji_nas are carved seated on the upper part of the black slab; an apparent indication that the image depicts the Jaina goddess of learning. On the base are two female attendants and a squatting worshipper on either side; to the right, a male and to the left, a female, perhaps representing the donors. The base of the image has an inscription in na_gari mentioning that it was made by the sculptor Manthala in 1034 A.D. She is stgated to be the protectress of the sixth Ti_rtha_nkara Padmaprabha. The eight anklets worn on her two ankles are reminiscent of the anklets worn by the bronze image unearthed in Mohenjo-daro dated ca. 2750 B.C. The inscription is read byh KN Dikshit (ASI) as follows: “On Sri_mad Bhoja narendra chandra nagari_ vidyadhari (?) romonadhih nama Sa* Sma* khalu Sukham (pra* pya na) ya_ psara_h Va_gdevi_ (m) pratima(m) vidha_ya janani yasya_-rjji (tanam trayi)***phaladhika_m dhara (sarin) murttim subham nirmmame iti subham//sutrodh ra-sahira-suta mana thalena ghatitam//vi tika sivadevena likhitam iti san 1091” (Translation: Om the Vidyadhari of the town Bhoja, the moon among kings** having first made the mother goddess speech*** great in fruit*** created the auspicious image. This was made by Manathala, the son of the craftsman Sahira. Written by Sivadeva, in the Samvat year 1091).

The legacy and perpetuated memory of the Sarasvati River across many generations, unites the peoples of Bharat, right from pre-historic times in an

unbroken, continuous sequence as evidenced by the archaeological finds consistent with the literary, epigraphic and other textual references.

Appendixes

1. Revival of Legendary Sarasvati Begins

REVIVAL OF LEGENDARY SARASVATI RIVER

Projects are ongoing which will have a long-term beneficial impact on major parts of North West India and revive memories of over 5,000 years ago, by reviving the mighty Sarasvati River. A mighty perennial river which had nurtured an ancient civilization which has given us the Vedas, had been desiccated due to tectonic causes, river migrations and aeolean activity (aandhi phenomenon). This is an unparalled event in the history of human civilization. Today technological means are available to revive this sacred river and to make the legacy of Sarasvati meaningful not only to entire Bharat but to the whole world. The project to revive Sarasvati River will be a superb project, of international significance.

Three projects to revive the legendary Sarasvati River were inaugurated during the last few months.

- One project is to link re-activate the ancient channels of the river from Adh Badri (Yamunanagar Dist.) to Pehoa (referred to as Pruthudaka in the Great Indian Epic, Mahaabhaarata)

- The second project to provide a piped feeder from the Bhakra Main canal to Pehoa, using the perennial waters of the Sutlej emanating from the Mansarovar glacier in Mt. Kailash. 50% of the cost is financed by a private philanthropist.The river channel from Adh Badri to Pehoa is mentioned as Sarasvati Nadi on the Survey of India topo-sheets. This project is financed by the World Bank as part of the package of $139 million US Dollars for rejuvenation of the water systems of North West India. The re-activation of this section will keep the river flowing all 365 days of the year upto Pehoa and beyond. Pehoa has the ancient Vasishtha ashram where the Sarasvati River becomes east-flowing and Sarasvati Ghats where homage to ancestors (pitru tarpan.a) is offered by pilgrims. The ghats are more ancient than the pilgrimage ghats in Varanasi on the Ganga River. This pilgrimage site was also visited by Balarama during his pilgrimage from Dwaraka to Mathura along the course of the Sarasvati River which is described in the shalya parvam of the Great Indian Epic

- The third project is to map the ancient drainage system of the Sarasvati River and identify groundwater aquifers and sanctuaries, over a stretch of 1600 kms. from Bandarpunch massif in Western Garhwal (Har-ki-dun glacier) to the Arabian Sea near Somnath (Prabhas Patan, Gujarat) using the remote sensing application centre in Jodhpur, Rajasthan and tritium analysis by

atomic scients in Bhabha Atomic Research Centre This is a pre-requisite for re-designing the drainage system of NW India to benefit over 200 million people of the River Basin.

Many challenges lie ahead in completing the rejuvenation of the Sarasvati River Basin from Har-ki-dun glacier in W. Garhwal upto Somnath, Gujarat stretched over four ecological zones: receding Himalayan glaciers, Siwalik foothills, semi-arid Marusthali and marshy Rann of Kutch and Saurashtra. The ambitious project profile includes: a comprehensive design of the NW India Drainage System and review of land-use patterns and afforestation programmes (including growing of halophytes—salt-resistant cash crops such as Salicornia brachiata), action to stop the receding glaciers in Uttar Pradesh (W. Garhwal) and Himachal Pradesh, resolving water-logging problems in Haryana and Punjab, recharging of the groundwater resources in Rajasthan and Kutch by extending the Rajasthan Canal beyond Jodhpur, using the waters of the Rajasthan Canal (which draws the waters from the perennial source of Sutlej – Manasarovar)—to recharge the groundwater resources, provision of additional wells in the entire Basin, use of solar and wind-power to power the pumpsets for tubewells, and, improvement of subsurface drainage system in the entire Sarasvati River Basin. Conjunctive development of watershed projects in Rajasthan and Gujarat using the groundwater resources and recharge facilities using perennial surface waters will be essential to evolve changes in the land-use patterns in the region and to provide the basic need of drinking water facilities in the semi-arid and marshy ecological zones of Bharat..

To effectively regulate the implementation, in an integrated manner, of the range of projects in complex ecological zones and some zones subject to tectonic disturbances, it is essential to constitute a Sarasvati River Basin Authority.

A number of organizations are involved in the research and project work:National Remote Sensing Agency, Geological Society of India, Bhabha Atomic Research Centre, Central Water Commission, State Water Resources Agencies, Central Arid Zone Research Institute, Central Arid Zone Forest Research Institute, Indian Space Research Organization. Satellite images from LANDSAT, EOSAT, IRS 1-A to 1-D have been put to extensive use in the research studies.

The participation of the scientific community in the studies is highlighted by the recent publication (Feb. 1999) by Geological Society of a book titled VEDIC SARASVATI describing the palaeodrainage system of North West India and the Sarasvati Project initiated by the Govt. of India, Central Ground Water Authority.

2. The following maps are appended to provide a framework to define the locus of the Sarasvati River Basin in NW India, stretching from the Ma_nasarovar lake (Mt. Kailas) to Somnath (Prabhas Patan) in the Arabian Sea—a very vast basin today inhabited by over 200 million people of Bharat and with the potential to

add at least 10% to the granary of Bharat and provide new livelihood opportunities as the projects progress :

- Sarasvati River earlier to 3500 BC (before desiccation in 1500 BC) (After Valdiya, 1996)
- Civilization sites on the banks of the Sarasvati River, ca. 3500 to 1500 BC (After Parpola, 1994)
- Civilization sites in Gujarat indicating possible course of Sarasvati River in Gujarat from Dholavira to Somnath
- Hydrogeological framework: the Rann, Nal Sarovar and Streams in Gujarat
- Outfall areas of the Sarasvati River in the Rann of Kutch, ca. 1500 BC (After Merh et al., 1999)
- Rajasthan Canal and the Sarasvati River Basin in NW India

  Extending the Rajasthan Canal (which has already been constructed over a distance of 650 kms.) by another 350 kms. to reach the outfall palaeo-deltas of the River Sarasvati in the Rann of Kutch, will bring the perennial waters from the Himalayas to Gujarat. This grand project of revived Sarasvati will revolutionize the landscape of Bharat.
- Aurel Stein's Tour of Sarasvati

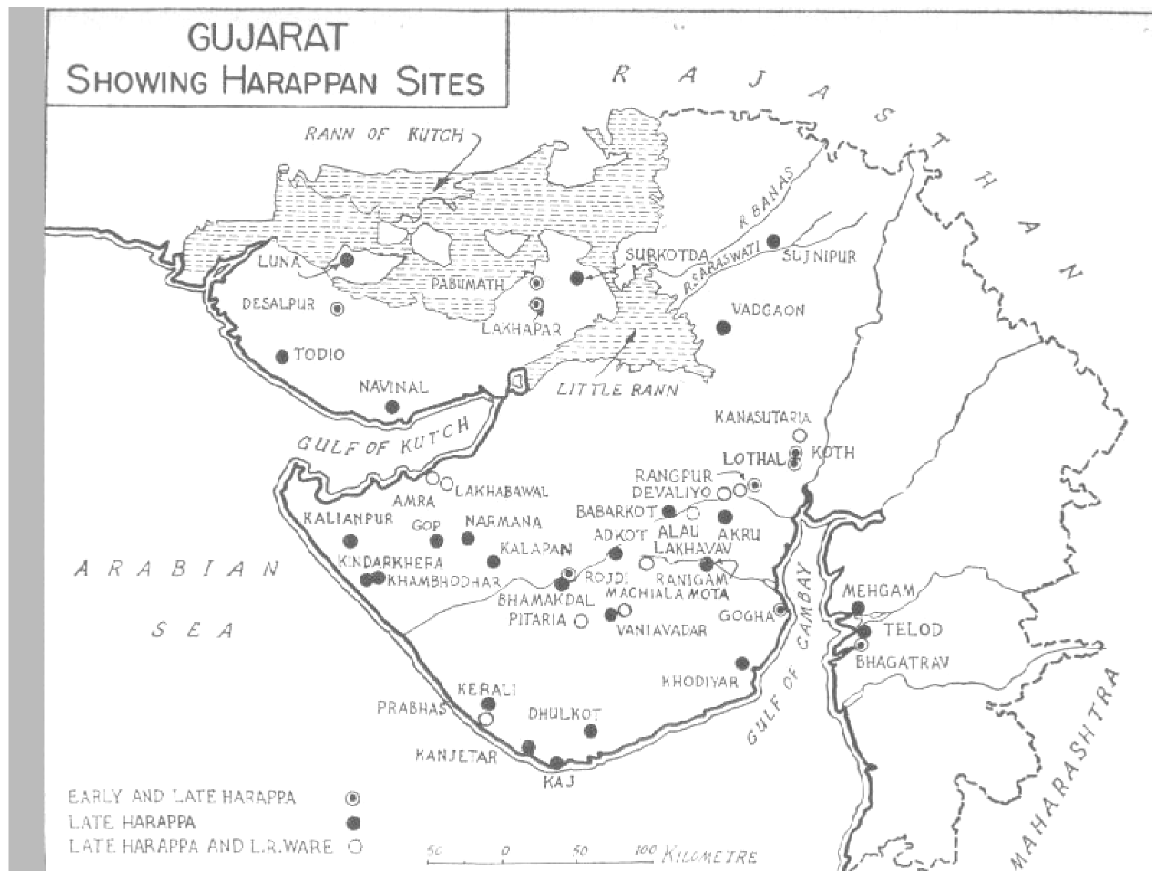
Sarasvati flowed from Hardikun glacier, W. Harhwal Bandarpunch massif, Himalayas; Shatdru (Sutlej) joined at Shatrana; Yamuna pirated Sarasvati at PaontaSaheb, after Valdiya 1996; Balarama's pilgrimage from Dwaraka to Mathura on Sarasvati.

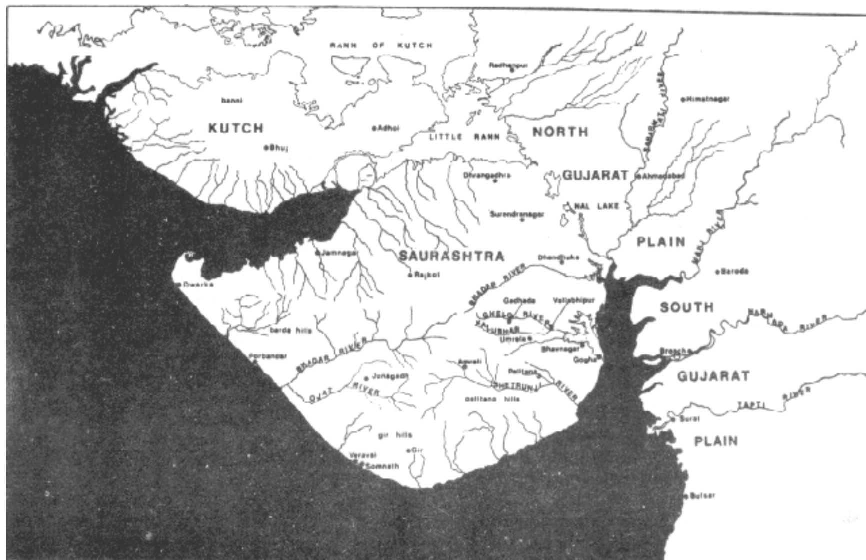
—— Channels in Vedic Lime
- - - Present Channel

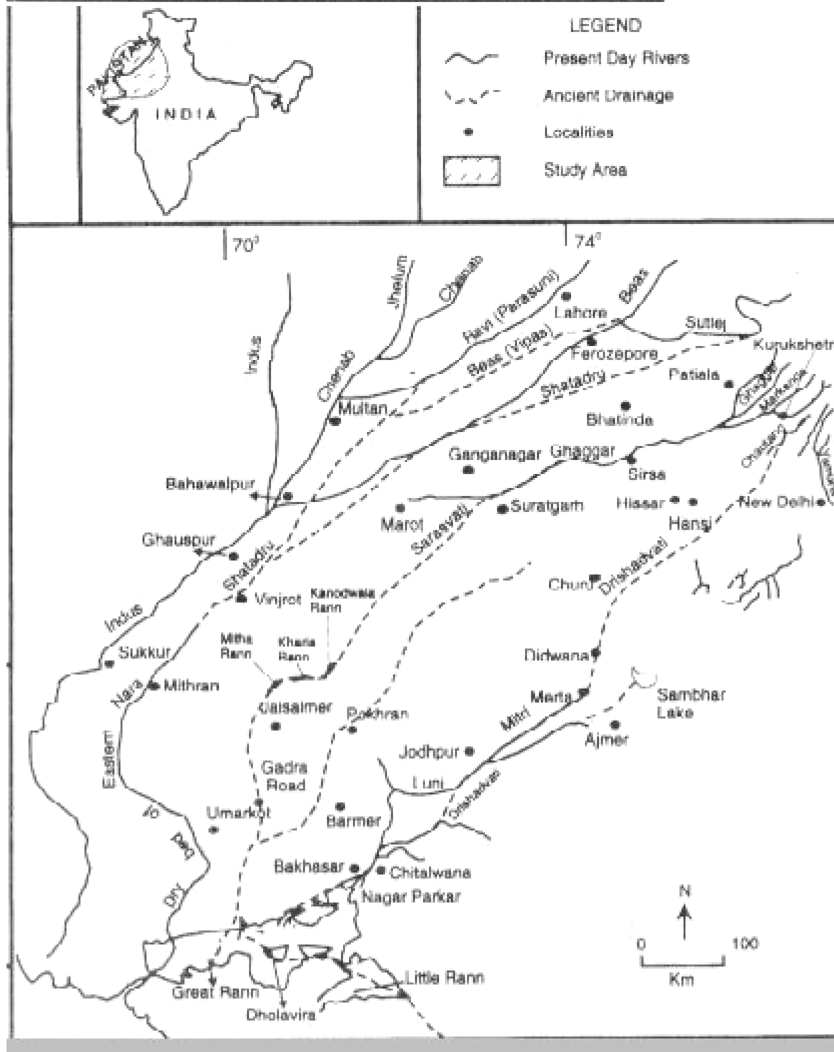
150 km

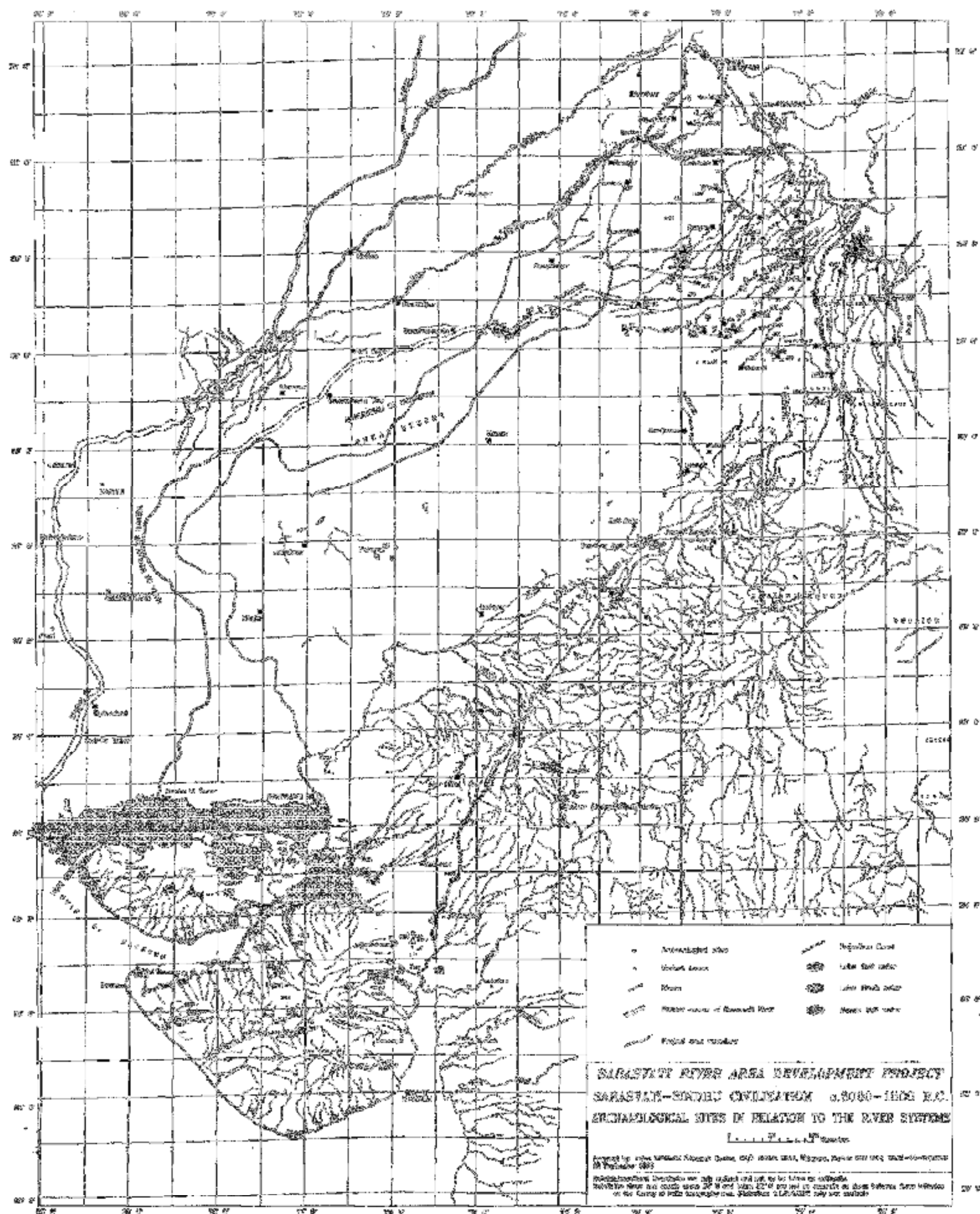
Land above 400 m

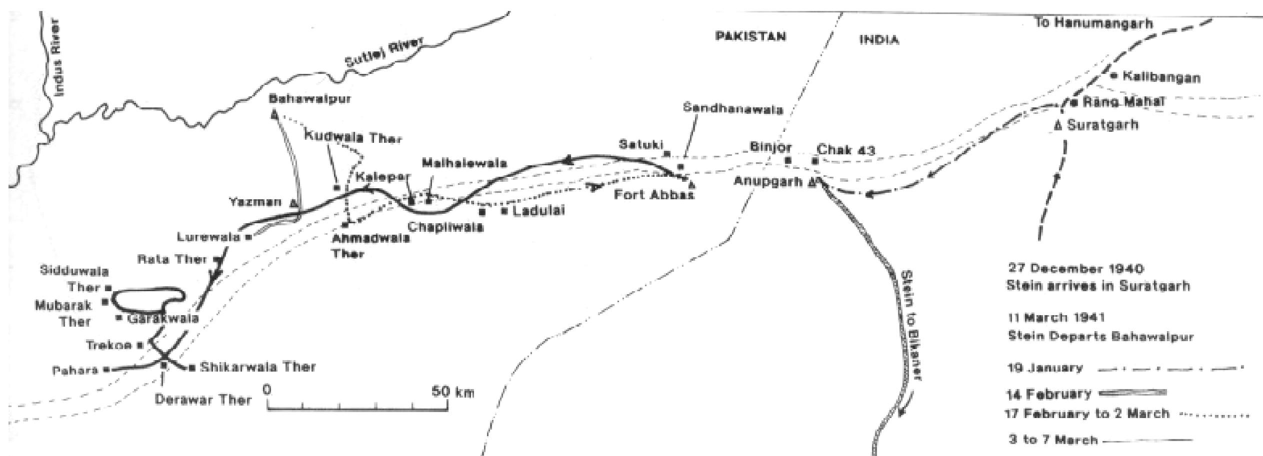
0 100 200 300 kilometres


GUJARAT
SHOWING HARAPPAN SITES
RAJASTHAN
RANN OF KUTCH
LUNA
PABUMATH
DESALPUR
LAKHAPAR
SURKOTDA
R. BANAS
R. SARASWATI
SUJNIPUR
VADGAON
TODIO
NAVINAL
LITTLE RANN
GULF OF KUTCH
KANASUTARIA
LOTHAL
KOTH
RANGPUR
DEVALIYO
LAKHABAWAL
AMRA
BABARKOT
KALIANPUR
GOP
NARMANA
ADKOT
ALAU
AKRU
LAKHAVAV
KALAPAN
ARABIAN SEA
KINDARKHERA
KHAMBHODHAR
ROJDI
RANIGAM
BHAMAKDAL
MACHIALA MOTA
PITARIA
VANIAVADAR
GOGHA
MEHGAM
TELOD
BHAGATRAV
GULF OF CAMBAY
KHODIYAR
KERALI
PRABHAS
DHULKOT
KANJETAR
KAJ
MAHARASHTRA
EARLY AND LATE HARAPPA
LATE HARAPPA
LATE HARAPPA AND L.R.WARE
50 0 50 100 KILOMETRE


RANN OF KUTCH
KUTCH
NORTH
GUJARAT
PLAIN
LITTLE RANN
SAURASHTRA
SOUTH
GUJARAT
PLAIN
NAL LAKE


PAKISTAN
INDIA
LEGEND
Present Day Rivers
Ancient Drainage
Localities
Study Area
70°
74°
Jhelum
Chenab
Ravi (Parasuni)
Lahore
Beas
Sutlej
Kurukshetra
Indus
Beas (Vipas)
Ferozepore
Patiala
Shatadru
Multan
Bhatinda
Ganganagar
Ghaggar
Sirsa
Bahawalpur
Marot
Suratgarh
Hissar
Hansi
New Delhi
Yamuna
Ghauspur
Sarasvati
Churu
Drishadvati
Vinjrot
Kanodwala Rann
Mitha Rann
Kharia Rann
Sukkur
Didwana
Nara
Mithran
Marta
Sambhar Lake
Jaisalmer
Pokhran
Mitri
Ajmer
Eastern
Jodhpur
Gadra Road
Luni
Umarkot
Barmer
Bakhasar
Chitalwana
Nagar Parkar
Dry
N
0
100
Km
Great Rann
Little Rann
Dholavira


SARASVATI RIVER AREA DEVELOPMENT PROJECT
SARASVATI-SINDHU CIVILIZATION
ARCHAEOLOGICAL SITES IN RELATION TO THE RIVER SYSTEMS



Aurel Stein's tour of Sarasvati (After Possehl, G.L., 1999*, Indus Age, The Beginnings*, Fig. 2.47).

Bibliography

Kalyanaraman, S., 1997, *Sarasvati Sindhu Civilization: evidence from the veda, archaeology, geology and satellite*, Xth World Sanskrit Conference, Bangalore, January 1997.

Kalyanaraman, S. 1997, A project to revive the Sarasvati river: Role of GIS, N*ational Seminar on Geographic Information Systems for Development Planning,* Chennai, 10-12 January, 1997, Renganathan Centre for Information Studies

Mughal, R.M. 1997, *Ancient Cholistan*, Rawalpindi, Ferozzsons Pvt. Ltd.

Parpola, Asko, *Deciphering the Indus Script*, Cambridge University Press, 1994.

Puri, V.M. and S.P. Verma, *Glaciological and Geological Evolution of Vedic Sarasvati in the Himalayas*, Paper presented in Itihasa Sankalana Samiti meet in Delhi on 5 October 1997 together with a presentation on Sarasvati River findings by Dr. S. Kalyanaraman

Radhakrishna, B.P. and Merh, S.S., (eds.), 1999, *Vedic Sarasvati*, Geological Society of India, Bangalore

Rao, S.M. and Kulkarni, K.M., Isotope hyudrology studies on water resources in western Rajasthan, *Current Science*, vol. 72, no. 1, 10 January 1997, pp. 55-61).

Srinivasan, K.R., Paleogeography, Framework of Sedimentation and Groundwater Potential of Rajasthan, India-Central part of Erstwhile Sarasvati Basin, Group Discussion, Geological Society of India: Drainage Evolution of North-western India with particular reference to the Lost Sarasvati, December 1997, Baroda

Valdiya, K.S., River Piracy, Sarasvati that disappeared, Bangalore, Indian Academy of Sciences, *Resonance*, 1,5:19-28, 1996.

About the Author



Dr. S. Kalyanaraman is an indologist with professional experience as a Senior Executive of the Asian Development Bank, Manila, Philippines where he has worked for 18 years until 1995. In 1995 he chose to retire 5 years' ahead of time, to devote himself fully to the Sarasvati River Research.

Dr. S. Kalyanaraman was born on 20 October 1939. His mother tongue is Tamil but all his school and undergraduate education was in Telugu and Sanskrit in Andhra Pradesh—Penukonda, Anantapur. He is conversant with Tamil, Telugu, Kannada, Hindi and Sanskrit languages. He is a graduate in Economics and Statistics from Annamalai University where he had Hindi as his second language. He has a doctorate in Public Administration from the University of the Philippines; his thesis has been published (Delhi, Ashish Publishers) as a book: *Public Administration in Asia*, a comparative study of development administration in six Asian countries (India, Bangladesh, Pakistan, Thailand, Indonesia, Philippines). In the '70s, his performance on introducing computers on the Indian Railways and the drawing up the Indian Railways' perspective plan for information technology (IT) came in for praise and subsequently, he was deputed to the ADB. Dr. Kalyanaraman, in his professional career, helped establish the Bank's IT network with 2,500 workstations. He is widely traveled and has visited a number of countries in the Asia-Pacific Region as he was responsible for managing the disbursements of a loan portfolio of US Dollars 60 billion to 600 development projects in countries such as China, Indonesia, Pakistan, Bangladesh, India, South Korea and 23 other countries. On his return to India in 1995 and presentation of a paper in the Tenth World Sanskrit Conference on his research findings, he has devoted himself to promoting projects for the revival of the Sarasvati River. Interestingly enough he has given a plan whereby the great Vedic Sarasvati River can be revived by tapping groundwater resources, in a sustainable way, and by linking with the perennial waters of the Sutlej. He participated in the scientific conference was held in Baroda in December 1998 and the proceedings are included in a work called *Vedic Sarasvati* published by the Geological Society of India, Bangalore.

He is associated with the Akhil Bharatiya Itihasa Sankalana Yojana whose Sanraks.ak is Moropant Pingale and National Organizing Secretary is Hari Bhau Vaze. The Itihasa Sankalana Yojana had started the work related to the re-discovery of the course of the Sarasvati River as the sheet-anchor of our ancient history dating back to the Vedic times since Sarasvati is invoked as the principal river and devi, in 72 ricas of the Rigveda, apart from many other references to va_k (speech, further elaborated as art and learning in later Vedic texts) as an

embodiment of Sarasvati. He was awarded the prestigious Vaakankar Award in 1999 by the Babasaheb Apte Smarak Samiti.

He has compiled an encyclopaedia on *Sarasvati* in 5 volumes. His work: *Indian Alchemy: Soma in the Veda* is in Press (Munshiram Manoharlal, Delhi). He has compiled an *Encyclopaedia on Sarasvati* in 5 volumes. He has contributed to Prof. Debiprasad Chattopadhyaya's multi-volume work on *History of Science and Technology in Ancient India*.